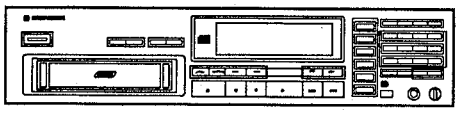
PIONEER®
The future of sound and vision.

Service Manual



ORDER NO.
ARP1957

MULTI-PLAY COMPACT DISC PLAYER

PD-M730

PD-M730 HAS FOLLOWING VERSIONS :

Type	Power requirement	Export destination
KU	AC 120V only	U.S.A
KC	AC 120V only	Canada
HEM	AC 220V, 240V (switchable) *	European continent
SD	AC 110V, 120V-127V, 220V, 240V (switchable)	Kingdom of Saudi Arabia and General market

* Change the primary wiring of the power transformer board assembly.

- **This manual is applicable to the KU, KC, HEM and SD types.**
- **As to the KC, HEM and SD types, refer to pages 65.**
- **Ce manuel pour le service comprend les explications de réglage en français.**
- **Este manual de servicio trata del método ajuste escrito en español.**

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IFO APR. 1990 Printed in Jap

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.
Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING
Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health & Safety Code, Section 25249.5).
When servicing or handling circuit boards and other components which contain lead in in solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale any smoke or fumes produced.

1. SAFETY INFORMATION

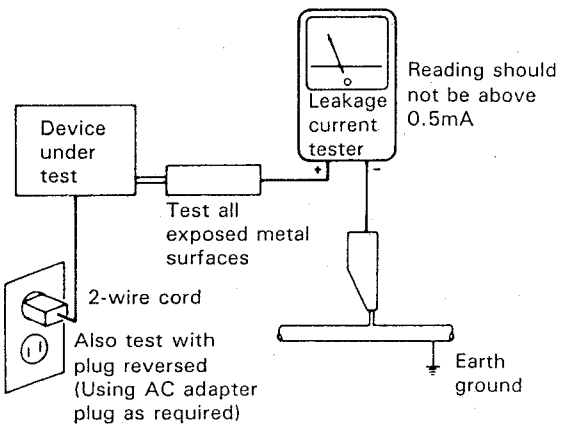
(FOR USA MODEL ONLY)

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5mA.


Leakage current tester
Reading should not be above 0.5mA
Device under test
Test all exposed metal surfaces
2-wire cord
Also test with plug reversed (Using AC adapter plug as required)
Earth ground

AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.
The use of a substitute replacement component which dose not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

(FOR EUROPEAN MODEL ONLY)

VARO!
AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.

ADVERSEL:
USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION UNDGÅ UDSAETTELSE FOR STRÅLING.

VARNING!
OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRAKTA EJ STRÅLEN.

LASER
Kuva 1
Lasersateilyn varoitusmerkki

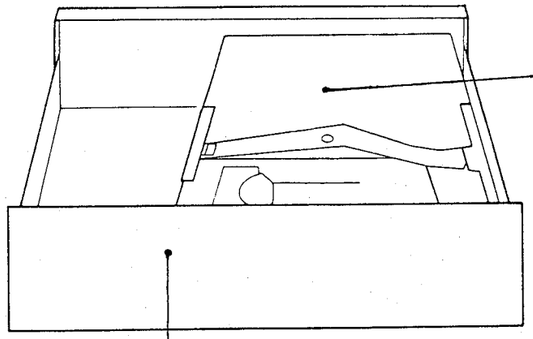
WARNING!
DEVICE INCLUDES LASER DIODE WHICH EMITS INVISIBLE INFRARED RADIATION WHICH IS DANGEROUS TO EYES. THERE IS A WARNING SIGN ACCORDING TO PICTURE 1 INSIDE THE DEVICE CLOSE TO THE LASER DIODE.

IMPORTANT
THIS PIONEER APPARATUS CONTAINS LASER OF HIGHER CLASS THAN 1. SERVICING OPERATION OF THE APPARATUS SHOULD BE DONE BY A SPECIALLY INSTRUCTED PERSON.

LASER DIODE CHARACTERISTICS
MAXIMUM OUTPUT POWER: 5 mw
WAVELENGTH: 780-785 nm

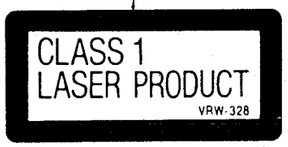
LASER
Picture 1
Warning sign for laser radiation

LABEL CHECK (MULTI MAGAZINE type)



ADVARSEL
USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHED SAFBRYDERE ER UDE AF FUNKTION.
UNDGÅ UDSÆTTELSE FOR STRÅLING.
VORSICHT!
UNSICHTBARE LASER-STRAHLUNG TRITT AUS, WENN DECKEL (ODER KLAPPE) GEÖFFNET IST! NICHT DEM STRAHL AUSSETZEN!
PRW1195

HEM type



HEM type

Additional Laser Caution

1. Laser Interlock Mechanism
   The ON/OFF (L/H) status of the loading state detection switches, LPS3 (S601) and LPS4 (S602), are detected with the system microcomputer. The laser diode does not oscillate unless these switches are both OFF (H), This is the so called clamped state. Consequently, if these switches are short-circuited on purpose, the interlock becomes invalid. Also, in the test mode (refer to page 35), the interlock mechanism does not operate. When pins ④, ⑤ or ㉘ of CXA1081S (IC1) is short-circuited to GND, or when there is a short-circuit between the respective pins of Q1 (fault condition), the laser diode keeps oscillating.
2. If the fault condition described in 1 is induced with the cover open and with the servo mechanism block removed to be turned over, close viewing of the objective lens with the naked eye will cause exposure to a class 1 or higher laser beam.

WARNING!

Lithium batteries. Danger of explosion. Replacement must be done by qualified personnel and only by following the instructions given in the service manual.

This warning is stated on the product or in the operating instructions. When replacing the lithium batteries, follow the note below.
Dispose of the used battery promptly. Keep away from children. Do not disassemble and do not dispose of in fire.
The battery used in this device may present a fire or chemical hazard if mistreated. Do not recharge, disassemble, heat above 100°C or incinerate. Replace only with the same Part Number. Use of another battery may present a risk of fire or explosion.

Note: The lithium battery installation position is shown in the exploded view and the P.C. board pattern.

ADVARSEL!

Lithiumbatteri — Eksplosionsfare ved fejlagtig håndtering. Udskiftning må kun ske med batteri af samme fabrikat og type. Levér det brugte batteri tilbage til leverandøren.

Denne advarsel or angivet på produktet eller i brugsvejledningen. Ved udskiftning af lithium batterierne følges nedenstående anveisning.
Batterierne må kun udskiftes med batterier af samme type og mærke.

VARNING

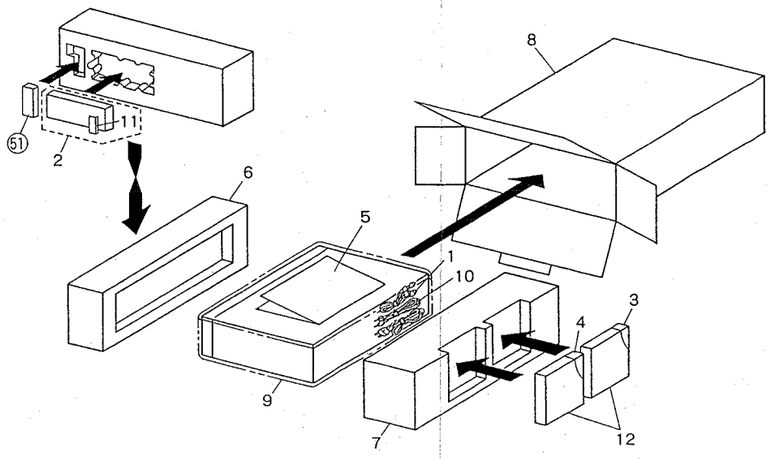
Explosionsfara vid felaktigt batteribyte. Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren. Kassera använt batteri enligt fabrikantens instruktion.

Denna varning finns på apparaten eller i bruksanvisningen. Följ nedanstående anvisningar vid byte av litiumbatterier.
Batterierna får endast bytas ut mot litiumbatterier av samma typ och fabrikat.

2. PACKING

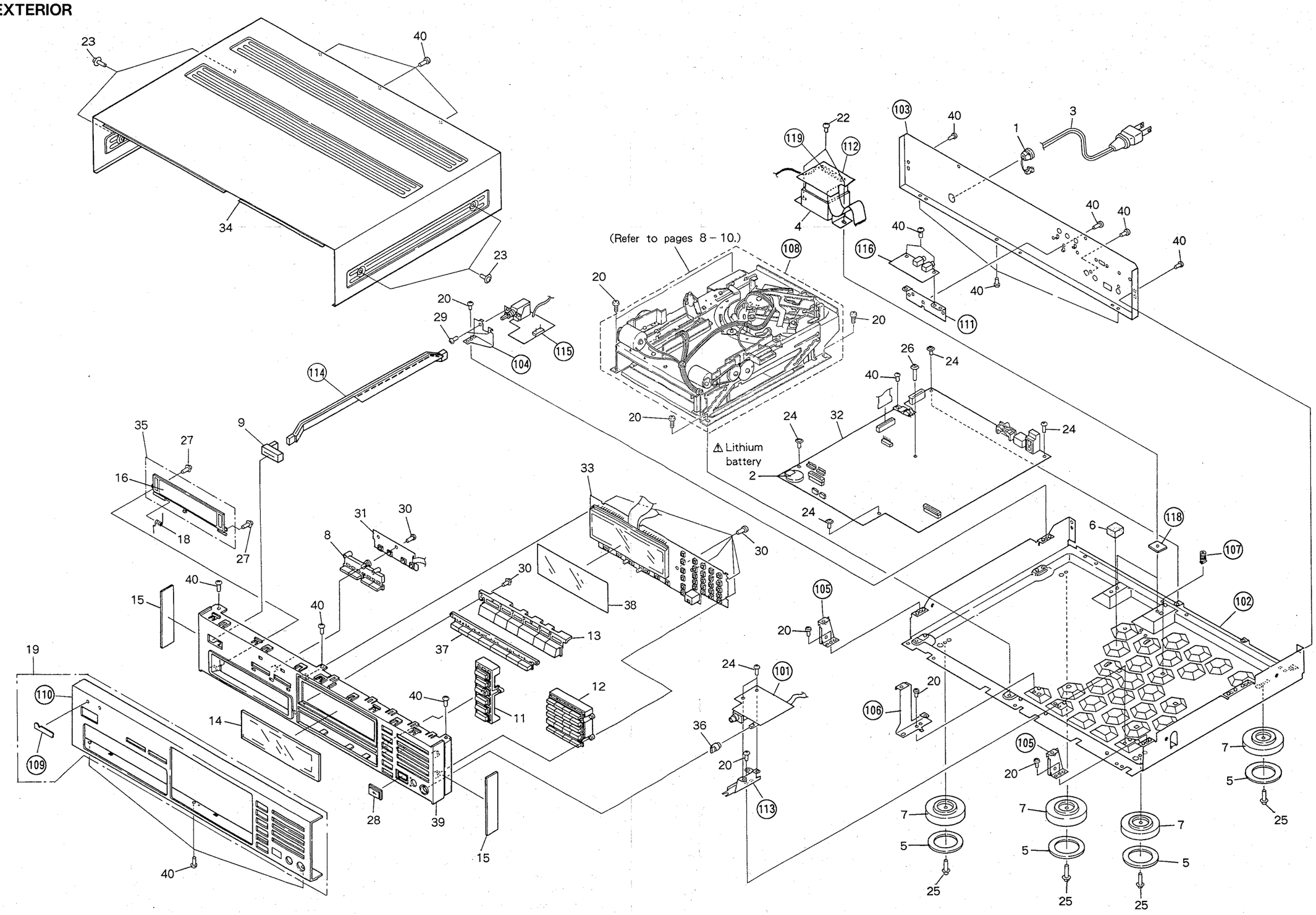
Parts List

Mark	No.	Part No.	Description
	1	PDE1001	Connection cord with pin plug
	2	PWW1033	Remote control unit
	3	PXA1043	Single magazine assembly
	4	PXA1308	Magazine assembly
	5	PRB1113	Operating instructions (English)
	6	PHA1097	Protector (F)
	7	PHA1098	Protector (R)
	8	PHG1455	CD packing case
	9	Z23-007	Mirror mat sheet
	10	PDE-319	Connection cord with mini plug
	11	PZN1001	Battery cover
	12	PYY1141	PP case
	51		Battery



3. EXPLODED VIEWS AND PARTS LIST

3.1 EXTERIOR

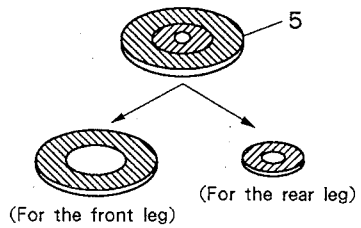


NOTES :
- Parts without part number cannot be supplied.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

Parts List

Mark	No.	Part No.	Description
⚠	1	CM-22C	Strain relief
⚠	2	DEM1002	Lithium battery (BT901, 3V)
⚠	3	PDG1002	AC power cord
⚠	4	PTT1094	Power transformer (AC120V)
	5	PNM1070	Stopper *
	6	PNM1059	Cushion
	7	VNK1095	Insulator
	8	PAC1386	Memory button
	9	PAC1372	Power button
	10	PAC1370	Headphone knob
	11	PAC1384	Disc button
	12	PAC1385	Track button
	13	PAD1051	Function button unit
	14	PAM1436	Display window
	15	PEB1050	Side rubber
	16	PAM1370	Door name plate
	17		• • • • •
	18	PBH1022	Door spring
	19	PEA1056	Front panel assembly
	20	BBZ30P060FCC	Screw
	21		• • • • •
	22	BBZ40P080FCC	Screw
	23	FBT40P080FZK	Screw
	24	IBZ30P060FCC	Screw
	25	IBZ30P120FCC	Screw
	26	IBZ30P150FCC	Screw
	27	IPZ30P060FMC	Screw
	28	PNW1075	Sensor window
	29	PMZ30P060FMC	Screw
	30	PPZ30P120FMC	Screw
◉	31	PWZ1933	Function small board assembly
◉	32	PWZ1835	Main board assembly
◉	33	PWZ1932	Function board assembly
	34	PYY1058	Bonnet
	35	PNW1532	Door
	36		• • • • •
	37	PAC1387	Mode button
	38	PAM1295	Display screen
	39	PNW1531	Function panel
	40	BBZ30P080FCC	Screw
	101		Headphone board assembly
	102		Base
	103		Rear panel
	104		SW angle
	105		Angle
	106		Center angle
	107		P.C.B spacer
	108		Multi machanism assembly
	109		Name plate
	110		Front panel
	111		SR angle
	112		Transformer board assembly
	113		Headphone angle
	114		Joint (POWER)
	115		Primary board assembly
	116		Synchro board assembly
	117		• • • • •
	118		Trans sheet
	119		Insulation cover

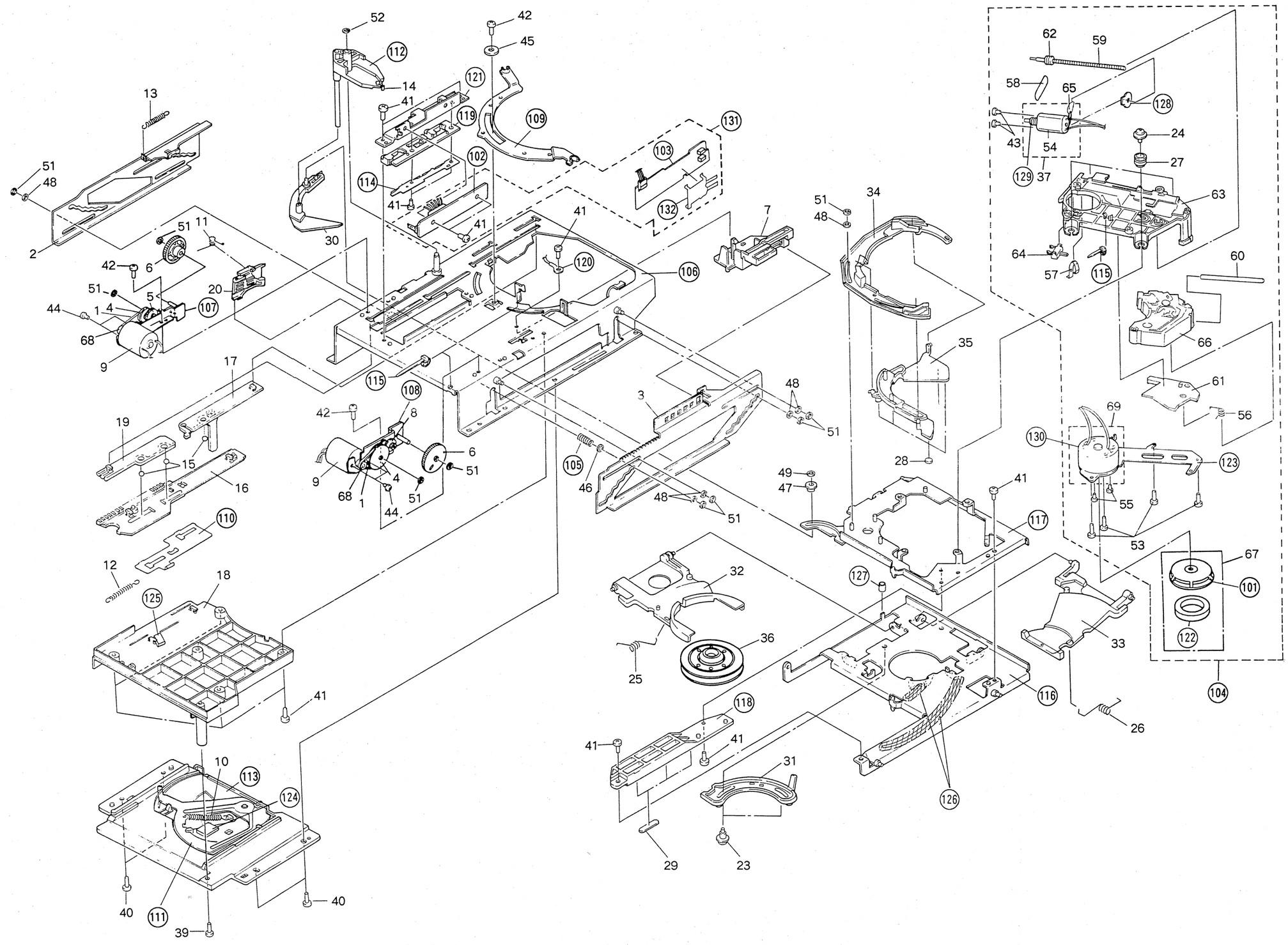
* The stopper consist of the big ring part and the small ring part.
If you stick the stopper to the leg, stick the big ring part to the front leg, and the small ring part to the rear leg.



3.2 MECHANISM SECTION

Parts List of Mechanism Section

Mark	No.	Part No.	Description
	1	PEB1138	Belt
	2	PNB1219	Stair (L)
	3	PNB1220	Stair (R)
	4	PNW1644	Gear pulley
	5	PNW1645	Gear
	6	PNW1097	Gear
	7	PNW1640	Select SW base
	8	PNW1122	Gear
	9	PXM1011	Motor (LOADING, DISC SELECT)
	10	PBH-465	Eject spring
	11	PBH1014	Lock spring
	12	PBH1091	SM spring
	13	PBH1018	Stair spring
	14	PBK1009	Drive spring
	15	PBP-001	Steel ball $\phi 4$
	16	PNW1099	Rack
	17	PNW1641	Operation plate
	18	PNW1639	Top guide
	19	PNW1253	Drive plate
	20	PNW1395	Lock lever
	21		• • • • •
	22		• • • • •
	23	PBA-125	Screw
	24	PBA1002	Screw
	25	PBH1016	Clamper spring (T)
	26	PBH1017	Clamper spring (B)
	27	PEB1014	Float rubber
	28	PED1001	Cushion (A)
	29	PED1002	Cushion (B)
	30	PXA1299	Rotary lever unit
	31	PNW1106	Clamper cam
	32	PNW1107	Clamper holder (T)
	33	PNW1108	Clamper holder (B)
	34	PNW1110	Pressure cam
	35	PNW1111	Upper tray
	36	PNW1448	Clamper
	37	PYY1025	Motor assembly (CARRIAGE)
	38		• • • • •
	39	BPZ30P100FMC	Screw
	40	IBZ30P060FMC	Screw
	41	BBZ30P060FMC	Screw
	42	PCZ30P040FMC	Screw
	43	PMZ20P030FMC	Screw
	44	PMZ30P030FMC	Screw
	45	WA30F120M100	Washer
	46	WA32D060D050	Washer
	47	PLA1023	Roller
	48	WA31D054D050	Washer
	49	WT12D032D025	Washer
	50		• • • • •
	51	WT26D047D025	washer
	52	WT31D054D025	Washer
	53	BPZ20P080FZK	Screw
	54	PXM1002	Motor (CARRIAGE)
	55	PBA1037	Screw M2 × 2.5
	56	PBH1008	Drive spring
	57	PBK1057	Plate spring
	58	PEB1072	Belt
	59	PLA1003	Drive screw
	60	PLA1004	Guide bar
	61	PNW1063	Carriage plate
	62	PNW1066	Pulley
	63	PNW1520	Mechanism chassis
	64	PSH1003	Slide switch (INSIDE)
	65	CGDYX104M25	Semiconductive ceramic capacitor
	66	PWY1009	Pickup assembly
	67	PYY1027	Disc table assembly
	68	PNW1643	Motor pulley
	69	PEA1086	Motor assembly (SPINDLE) (with oil)
	101		Disc table
	102		Switch board assembly
	103		Select board assembly
	104		Servo mechanism assembly
	105		Pressure spring
	106		Main chassis
	107		Gear angle (L)
	108		Gear angle (R)
	109		Synchronized lever
	110		SM select
	111		Eject lever
	112		Drive lever
	113		Bottom guide
	114		Actuater spring
	115		Binder
	116		Sub chassis
	117		Upper chassis
	118		Upper guide
	119		Actuater
	120		Earth lead unit
	121		SW angle
	122		Magnet
	123		Base plate
	124		Cushion
	125		Cushion rubber 2.5
	126		Axis-sliding sheet
	127		Rubber tube
	128		Carriage M board
	129		Motor pulley
	130		Spindle motor
	131		Mechanism board assembly
	132		Selection plate spring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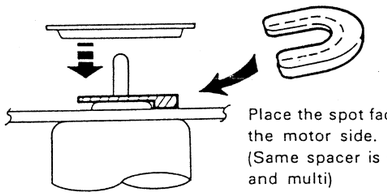
1 2 3 4 5 6

A B C D

4. REASSEMBLY FOR DISC TABLE AND DRIVE SPRING

● DISC TABLE PRESSURE-IN SPACER

On the plastic section of the servo mechanism, a disc table pressure-in spacer is formed. When replacing disc table and motor, cut off and use as a spacer.



Place the spot facing section on the motor side.
(Same spacer is O.K. for single and multi)

● HOW TO HOOK THE SERVO MECHANISM ASSEMBLY DRIVE SPRING

- Place the carriage plate in the outermost position.
- Hook the drive spring to the carriage plate spring hooking pin (A) with the shorter arm up, in such a position that the shorter arm forms a right angle with the pickup guide bar (see Fig−1).
- Pass the guide bar through the pickup, insert the guide bar right side into the corresponding spot on the mechanism chassis, then insert its left side into the corresponding spot on the mechanism chassis so that the carriage plate spring hooking pin (A) gets into the pickup long slot (B).
- After moving the drive spring longer arm to the left (① direction), hook it to the carriage plate hook (C).

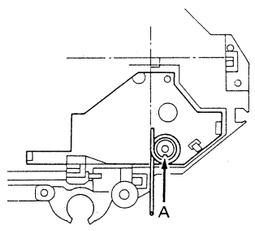


Fig.−1

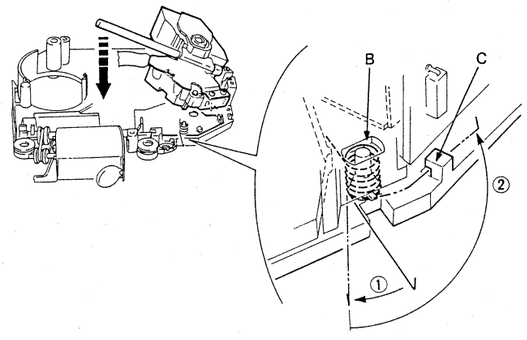


Fig.−2

5. IC INFORMATION

■ CXD1167Q (IC3)

DECODER

● Pin function

Pin No.	Pin name	I/O	Function
1	FSW	O	Pin 1 output is switched constant when the output filter of the spindle motor is energized.
2	MON	O	ON/OFF control for spindle motor.
3	MDP	O	Spindle motor drive.
4	MDS	O	Spindle motor dirve.
5	EFM	I	EFM signal from RF amplifier.
6	ASY	O	Controls slice level of the EFM signal.
7	LOCK	O	The output of pin 7 reflects the status of the GFS signal which is sampled at WFCK/16. When GFS signal is at "H", the output of pin 7 is also at "H", but when the signal has remained at "L" for at least 8 samples, the output of pin 7 is at "L".
8	VCOO	O	When VCO locks to EFM signal, the frequency becomes 8.6436 MHz. (17.2872 MHz during double speed playback)
9	VCOI	I	VCO input.
10	TEST	I	(0V)
11	PDO	O	The output of pin 11 provides the phase comparison of EFM signal and VCO/2.
12	Vss	—	GND (0V)
13	CLK	I	Pin 13 provides the serial transmission clock from the CPU. Data is latched on the rising edge of the clock.
14	XLT	I	Pin 14 provides latch input from the CPU. 8-bit shift register data (serial data received from the CPU) is latched in each of the registers.
15	DATA	I	Serial data from the CPU.
16	XRST	I	System reset input. Reset at "L".
17	CNIN	I	Tracking pulse input.
18	SENS	O	Output reflecting internal condition as designated by address.
19	MUTG	I	Muting input. MUTG is at "L" when ATTM of internal register A is at "L" (normal condition). MUTG is at "H" when muting condition is set.,
20	CRCF	O	Outputs the results of subcode Q CRC check.
21	EXCK	I	Clock input for subcode serial output.
22	SBSO	O	Serial output of subcode.
23	SUBQ	O	Output of subcode Q.
24	SCOR	O	Output of subcode sync S0 + S1.
25	SQCK	I/O	Clock for reading subcode Q.
26	SQEX	I	Input for selecting SQCK. (See CPU interface paragraph)
27	DOTX	O	Digital output ($\overline{\text{WFCK}}$ is output when D0 is off.)
28	GFS	O	Indicates the frame sync lock status.
29	TEST	I	H or L is fixed. (Do not open.)
30	TEST		
31	TEST		
32	TEST		
33	V_{DD}	—	Power supply (+5V)
34	TEST	I	H or L is fixed. (Do not open.)
35	TEST		
36	TEST		
37	TEST		
38	TEST		
39	TEST		
40	TEST		

Pin No.	Pin name	I/O	Function
41	TEST	I	H or L is fixed. (Do not open.)
42	TEST		
43	TEST		
44	TEST		
45	TEST		
46	TEST		
47	TEST		
48	TEST		
49	TEST		
50	TEST		
51	C4M	O	Divider output for crystal. f = 4.2336 MHz. (8.4672 MHz at double speed playback.)
52	Vss	—	GND (0V)
53	XTAI	I	Input to crystal oscillator circuit. Depending on the mode the frequency is either f = 8.4672 or 16.9344 MHz. (16.9344 MHz at double speed playback.)
54	XTAO	O	Output from crystal oscillator circuit. Depending on the mode the frequency is either f = 8.4672 or 16.9344 MHz. (16.9344 MHz at double speed playback.)
55	MD1	I	Mode selection input 1.
56	MD2	I	Mode selection input 2.
57	MD3	I	Mode selection input 3.
58	SLOB	I	Code switch input for audio data output. 2's complement output when at "L", offset binary output when at "H".
59	PSSL	I	Mode switch input for audio data output. Serial output when at "L", parallel output when at "H".
60	APTR	O	Control output for aperture compensation at "H" during R-ch.
61	APTL		Control output for aperture compensation at "H" during L-ch.
62	DA01		DA01 (LSB of parallel audio data) is output when PSSL = at "H". C1F1 is output when PSSL = at "L".
63	DA02		DA02 is output when PSSL = at "H". C1F2 is output when PSSL = at "L".
64	DA03		DA03 is output when PSSL = at "H". C2F1 is output when PSSL = at "L".
65	DA04		DA04 is output when PSSL = at "H". C2F2 is output when PSSL = at "L".
66	DA05		DA05 is output when PSSL = at "H". C2FL is output when PSSL = at "L".
67	DA06		DA06 is output when PSSL = at "H". C2PO is output when PSSL = at "L".
68	DA07		DA07 is output when PSSL = at "H". RFCK is output when PSSL = at "L".
69	DA08		DA08 is output when PSSL = at "H". WFCK is output when PSSL = at "L".
70	DA09		DA09 is output when PSSL = at "H". $\overline{\text{PLCK}}$ is output when PSSL = at "L".
71	DA10		DA10 is output when PSSL = at "H". UGFS is output when PSSL = at "L".
72	DA11		DA11 is output when PSSL = at "H". GTOP is output when PSSL = at "L".
73	V_{DD}	—	Power supply (+5V)
74	DA12	O	DA12 is output when PSSL = at "H". RAOV is output when PSSL = at "L".
75	DA13		DA13 is output when PSSL = at "H". C4LR is output when PSSL = at "L".
76	DA14		DA14 is output when PSSL = at "H". $\overline{\text{C210}}$ is output when PSSL = at "L".
77	DA15		DA15 is output when PSSL = at "H". C210 is output when PSSL = at "L".
78	DA16		DA16 (MSB of parallel audio data) is output when PSSL = at "H". DATA is output when PSSL = at "L".
79	WDCK	O	Strobe signal output. Output is 176.4kHz when DF is on. (352.8kHz at double speed playback) Output is 88.2kHz when DF is off. (176.4kHz at double speed playback)
80	LRCK	O	Strobe signal output. Oupput is 88.2kHz when DF is on. (176.4kHz at double speed playback) Output is 44.1kHz when DF is off. (88.2kHz at double speed playback)

6. P. C. B's PARTS LIST

NOTES :
- Parts without part number cannot be supplied.
- Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).
560 Ω → 56 × 10^1 → 561 ····· RD1/4PS 5 6 1 J
47k Ω → 47 × 10^3 → 473 ····· RD1/4PS 4 7 3 J
0.5 Ω → 0R5 ····· RN2H 0 R 5 K
1 Ω → 010 ····· RS1P 0 1 0 K

Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).
5.62k Ω → 562 × 10^1 → 5621 ····· RN1/4SR 5 6 2 1 F

Mark	NO	Description	Part NO.
Primary Board Assembly			
SWITCH			
⚠	S301	SWITCH(POWER)	PSA-009
CAPACITOR			
⚠	C311	CAPACITOR (CERAMIC)	RCG-009
Headphone Board Assembly			
SEMICONDUCTOR			
	IC401		M5218L
COILS			
	L401-403	RADIAL INDUCTOR	LFA010K
CAPACITORS			
	C401, 402	ELECTR. CAPACITOR	CEAS330M16
	C403-405	CERAMIC CAPACITOR	CKCYF473Z50
	C406, 407	MYLOR FILM CAPACITOR	CQMA104J50
	C408, 409	CERAMIC CAPACITOR	CKCYF103Z50
	C410		CKPUYF103Z25
RESISTORS			
	VR401	VARIABLE(PHONES LEVEL)	PCS1002
	Other resistors		RD1/6PM□□□J
OTHERS			
	JA401	JACK(PHONES)	RKN1001
Synchro Board Assembly			
SEMICONDUCTORS			
	Q701	TRANSISTOR	DTC124ES
	D21, 23	DIODE	1SS254
CAPACITORS			
	C702	CERAMIC CAPACITOR	CKCYF103Z50
	C703	CERAMIC CAPACITOR	CCCSL101J50
	C704	CERAMIC CAPACITOR	CKCYF103Z50
	C705	CERAMIC CAPACITOR	CCCS101J50

Mark	NO	Description	Part NO.
RESISTOR			
	R701	CARBONFILM RESISTOR	RD1/6PM121J
OTHERS			
	JA702, 703	JACK(CONTROL IN/OUT)	RKN1004
	JA704	JACK(CD·DECK SYNCHRO)	RKN1014
◉Main Board Assembly (PWZ1835)			
SEMICONDUCTORS			
	IC1	PRE AMP IC	CXA1081S
⚠	IC10	SYSTEM RESET IC	M51957AL
⚠	IC11		NJM7805FA
⚠	IC12		NJM7905FA
	IC13		NJM7812FA
	IC14		NJM7912FA
	IC15		NJM78L05A
⚠	IC16-18	POWER OP-AMP	TA8410K
	IC2	SERVO CONTROLL IC	CXA1082BS
	IC21		NJM7805FA
	IC22		NJM7912FA
	IC24, 25		NJM5532DD
	IC26	IC	SM5813AP
	IC27		PD0026A
	IC28, 29	IC	PCM58P
	IC3	EFM DEMODULATION IC	CXD1167Q
⚠	IC30-33	IC PROTECTOR	ICP-N10
	IC901		HD6303YP
	IC902	MEMORY-IC	PDK006
	IC903		LH5164D-10L
	IC904		M5L8255AP-5
	IC905	LOGIC IC	BU74HC139
	Q1	TRANSISTOR	2SA1399
	Q10, 11	TRANSISTOR	DTA124ES
	Q12	TRANSISTOR	DTC124ES
	Q13, 14	TRANSISTOR	2SC3068
	Q16, 17	TRANSISTOR	2SC3068
	Q18	TRANSISTOR	2SA933S
	Q19	TRANSISTOR	DTC124ES
	Q5	TRANSISTOR	2SC1740S
	Q6	TRANSISTOR	DTA124ES

nay be unavailable.
. Therefore, when

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nce is shown by

Part NO.
D1/6PM121J
KN1004
KN1014
Z1835)
XA1081S
51957AL
JM7805FA
JM7905FA
JM7812FA
JM7912FA
JM78L05A
A8410K
XA1082BS
JM7805FA
JM7912FA
JM5532DD
M5813AP
D0026A
CM58P
KD1167Q
CP-N10
D6303YP
DK006
45164D-10L
5L8255AP-5
J74HC139
SA1399
TA124ES
TC124ES
SC3068
SC3068
SA933S
TC124ES
SC1740S
TA124ES

Mark	NO	Description	Part NO.
	Q7	TRANSISTOR	2SA933S
	Q8	TRANSISTOR	2SC1740S
	Q9	TRANSISTOR	2SD2144S
⚠	D1, 10	DIODE	1SR139-100
⚠	D11		MTZ30B
⚠	D12		MTZ5.1B
⚠	D13	DIODE	1SR139-100
	D14-16	DIODE	1SS254
⚠	D2	DIODE	1SR139-100
	D20, 22	DIODE	1SS254
⚠	D25	BRIDGE RECTIFIER	2W02-5008-L
⚠	D3, 4	DIODE	1SR139-100
	D901-903	DIODE	1SS254
	S1	SWITCH(TEST MODE)	PSG-065
	L5		LAU010K
	L902	RADIAL INDUCTOR	LFA010K
	C1	MYLOR FILM CAPACITOR	CQMA472J50
	C10	ELECTR. CAPACITOR	CEAS101M10
	C100, 101	ELECTR. CAPACITOR	CEAS332M25
	C102, 103	ELECTR. CAPACITOR	CEAS222M16
	C104, 105	ELECTR. CAPACITOR	CENA222M25
	C106, 107	ELECTR. CAPACITOR	CEAS102M25
	C108, 109	ELECTR. CAPACITOR	CEAS102M16
	C11	MYLOR FILM CAPACITOR	CQMA333K50
	C111	CERAMIC CAPACITOR	CCCSL101J50
	C115	CERAMIC CAPACITOR	CKCYF103Z50
	C116	CERAMIC CAPACITOR	CCCSL221J50
	C117	ELECTR. CAPACITOR	CEAS330M16
	C118	CERAMIC CAPACITOR	CKCYF473Z50
	C12	ELECTR. CAPACITOR	CEAS330M16
	C121, 122	PL. STYRENE CAPACITOR	CQSF102J50
	C124-127	ELECTR. CAPACITOR	CEAS3R3M50
	C13	MYLOR FILM CAPACITOR	CQMA332J50
	C131, 133	CERAMIC CAPACITOR	CKCYF473Z50
	C137	CERAMIC CAPACITOR	CKCYF473Z50
	C14	MYLOR FILM CAPACITOR	CQMA103K50
	C149	ELECTR. CAPACITOR	CEAS010M50
	C15, 158	ELECTR. CAPACITOR	CEAS330M16
	C159	CERAMIC CAPACITOR	CKCYF473Z50
	C16	ELECTR. CAPACITOR	CEASR47M50
	C160	CERAMIC CAPACITOR	CKCYF473Z50
	C161	CERAMIC CAPACITOR	CCCSL221J50
	C17	MYLOR FILM CAPACITOR	CQMA103K50
	C175, 176	CERAMIC CAPACITOR	CKCYF103Z50
	C180	CERAMIC CAPACITOR	CKDYF103Z50
	C19	ELECTROLYTIC CAPACIT	CEAS471M16
	C2	CERAMIC CAPACITOR	CCCCH300J50
	C20	ELECTROLYTIC CAPACIT	CEAS471M16
	C21	MYLOR FILM CAPACITOR	CQMA333K50
	C22	ELECTR. CAPACITOR	CEASR47M50
	C23, 26	ELECTR. CAPACITOR	CEAS330M16

SWITCH

COILS

CAPACITORS

Mark	NO	Description	Part NO.
	C27	MYLOR FILM CAPACITOR	CQMA472J50
	C29	MYLOR FILM CAPACITOR	CQMA272J50
	C3	CERAMIC CAPACITOR	CCCCH390J50
	C31, 32	MYLOR FILM CAPACITOR	CQMA104K50
	C33	MYLOR FILM CAPACITOR	CQMA102J50
	C34	ELECTR. CAPACITOR	CEAS4R7M50
	C35	MYLOR FILM CAPACITOR	CQMA104K50
	C36	ELECTR. CAPACITOR	CEAS330M16
	C37	MYLOR FILM CAPACITOR	CQMA333K50
	C38	ELECTR. CAPACITOR	CEAS101M50
	C39	MYLOR FILM CAPACITOR	CQMA104K50
	C4	CERAMIC CAPACITOR	CCCCH300J50
	C40	ELECTROLYTIC CAPACIT	CEANP4R7M25
	C41	ELECTR. CAPACITOR	CEAS101M50
	C43	ELECTR. CAPACITOR	CEAS101M10
	C46	MYLOR FILM CAPACITOR	CQMA103K50
	C47	ELECTR. CAPACITOR	CEAS330M16
	C48	ELECTR. CAPACITOR	CEAS3R3M50
	C49	MYLOR FILM CAPACITOR	CQMA472J50
	C5	ELECTROLYTIC CAPACIT	CEAS471M16
	C50	ELECTR. CAPACITOR	CEAS330M16
	C51	MYLOR FILM CAPACITOR	CQMA102J50
	C53, 54	ELECTR. CAPACITOR	CEAS101M50
	C55	CERAMIC CAPACITOR	CCCCH300J50
	C56, 57	ELECTR. CAPACITOR	CEAS330M16
	C58-63	ELECTR. CAPACITOR	CEAS101M25
	C64-67	ELECTR. CAPACITOR	CEAS3R3M50
	C69	ELECTROLYTIC(47μ/50)	PCH1082
	C7	ELECTR. CAPACITOR	CEAS101M50
	C70	ELECTROLYTIC(47μ/50)	PCH1082
	C71, 72	MYLOR FILM CAPACITOR	CQMA683J50
	C73, 74	MYLOR FILM CAPACITOR	CQMA562J50
	C75, 76	MYLOR FILM CAPACITOR	CQMA821J50
	C77, 78	MYLOR FILM CAPACITOR	CQMA153J50
	C79, 80	ELECTROLYTIC(47μ/50)	PCH1082
	C83, 84	PL. STYRENE CAPACITOR	CQSF101J50
	C85	ELECTR. CAPACITOR	CEASR33M50
	C86	CERAMIC CAPACITOR	CKCYF103Z50
	C87	CERAMIC CAPACITOR	CCCSL101J50
	C88	ELECTR. CAPACITOR	CEAS101M50
	C89	ELECTR. CAPACITOR	CEAS470M50
	C9	MYLOR FILM CAPACITOR	CQMA333K50
	C90	ELECTR. CAPACITOR	CEAS470M50
	C901, 902	CERAMIC CAPACITOR	CKCYF103Z50
	C903	ELECTR. CAPACITOR	CEAS101M10
	C906	CERAMIC CAPACITOR	CKCYF103Z50
	C907	ELECTR. CAPACITOR	CEAS330M16
	C908	CERAMIC CAPACITOR	CKCYF103Z50
	C91	ELECTR. CAPACITOR	CEAS101M25
	C910	ELECTR. CAPACITOR	CEAS330M16
	C911	CERAMIC CAPACITOR	CKCYF103Z50
	C915, C92	CERAMIC CAPACITOR	CKCYF473Z50
	C93, 94	ELECTROLYTIC CAPACIT	CEANP470M50
	C95	CERAMIC CAPACITOR	CCCCH070D50
	C96	CERAMIC CAPACITOR	CCCCH100D50
	C97	CERAMIC CAPACITOR	CCCCH330J50
	C98	CERAMIC CAPACITOR	CCCSL101J50
	C99	ELECTR. CAPACITOR	CEAS101M50

Mark	NO	Description	Part NO.
	VR10	VR(100kΩ)	VRTB6VS104
	VR2	SEMI-FIXED RESISTOR(10kΩ)	VRTB6VS103
	VR3-7	VR(22kΩ)	VRTB6VS223
	VR8	VR(1kΩ)	VRTS6VS102
	VR9	VR(100kΩ)	VRTB6VS104
	R30	METAL FILM RESISTOR	RN1/6PQ3601F
	Other resistors		RD1/6PM□□□J
⚠	BT901	LITHIUM BATTERY	DEM1002
	DL1, 2		PTF1012
	JA1	JACK(LINE OUT L/R)	PKB1011
	JA3(OPTICAL DIGITAL OUT)		TOTX173
	CN11		SD-52045-1710
	CN301		KPC10
	X1	(4MHz)	FCR4.0MC
	X3	XTAL RES (OSC)(16.9344MHz)	PSS1001
	C301-310	CERAMIC CAPACITOR	CKCYF103Z50
	IC201	MICROCOMPUTER	PDG036
	Q201, 202	TRANSISTOR	DTA124ES
	Q204-206	TRANSISTOR	2SC1740S
	D201		SLH-56MC3H
	D202		SLH-56YC3HYL
	S204-208	SWITCH	PSG1006
	S212-216		
	S220-248		
	MODE(DELETE/CLEAR), PROGRAM (CHECK/PGM), DISC NUMBER(1-6), TRACK NUMBER(1-10, +10, ≧20), LEVEL(-, +), TIME FADE EDIT, AUTO PROGRAM EDIT, EJECT(△), STOP(□), PAUSE(▯▯), PLAY(▷), TRACK SEARCH (⏮/⏭), AUTO FADER(↗/↘), INDEX SEARCH(←/→), RANDOM PLAY, MANUAL SEARCH(◁◁, ▷▷)		
	L201, 202		LAU010K
	C201, 202		CKPUYF223Z25
	C203	ELECTROLYTIC CAPACIT	CEAS330M16
	C204		CKPUYF103Z25
	All resistors		RD1/6PM□□□J
	Remote sensor		GP1U52X
	V201	FLUORESCENT INDICATO	PEL1028
	X201	CERAMIC RESONATOR(4.19MHz)	VSS1014

Transformer Board Assembly

CAPACITORS

◉Function Board Assembly (PWZ1932)

SEMICONDUCTORS

SWITCHES

COILS

CAPACITORS

RESISTORS

OTHERS

Mark	NO	Description	Part NO.
	S251-254	SWITCH (TIME, REPEAT, MULTI MEMORY(STORE/ERASE))	PSG1006
	S601-604	PUSH SWITCH (LOADING POSITION, MAGAZINE)	PSH1008
	S605, 606	PUSH SWITCH (DISC POSITION)	PSH1008

◉Function Small Board Assembly (PWZ1933)

SWITCHES

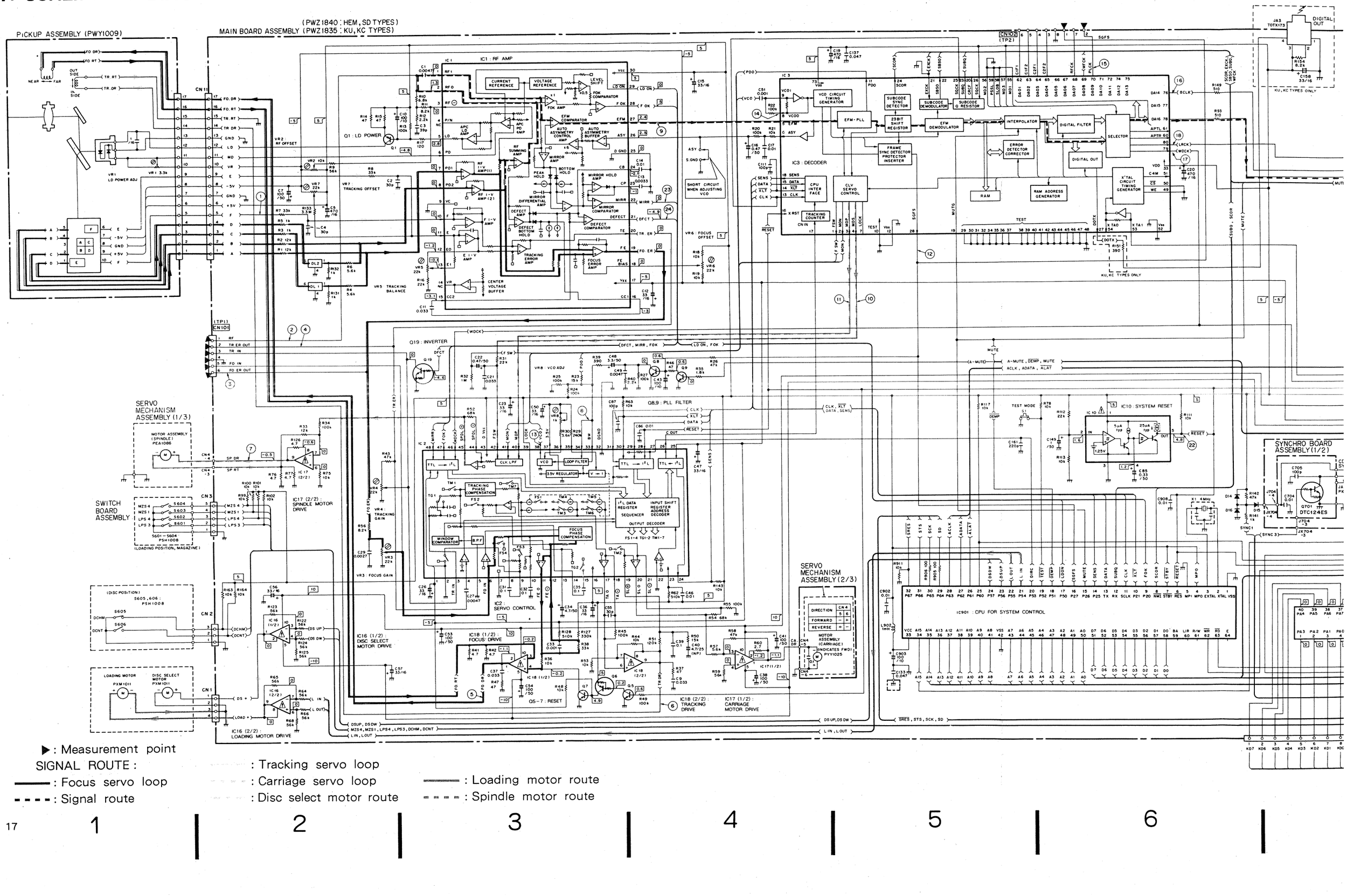
Switch Board Assembly

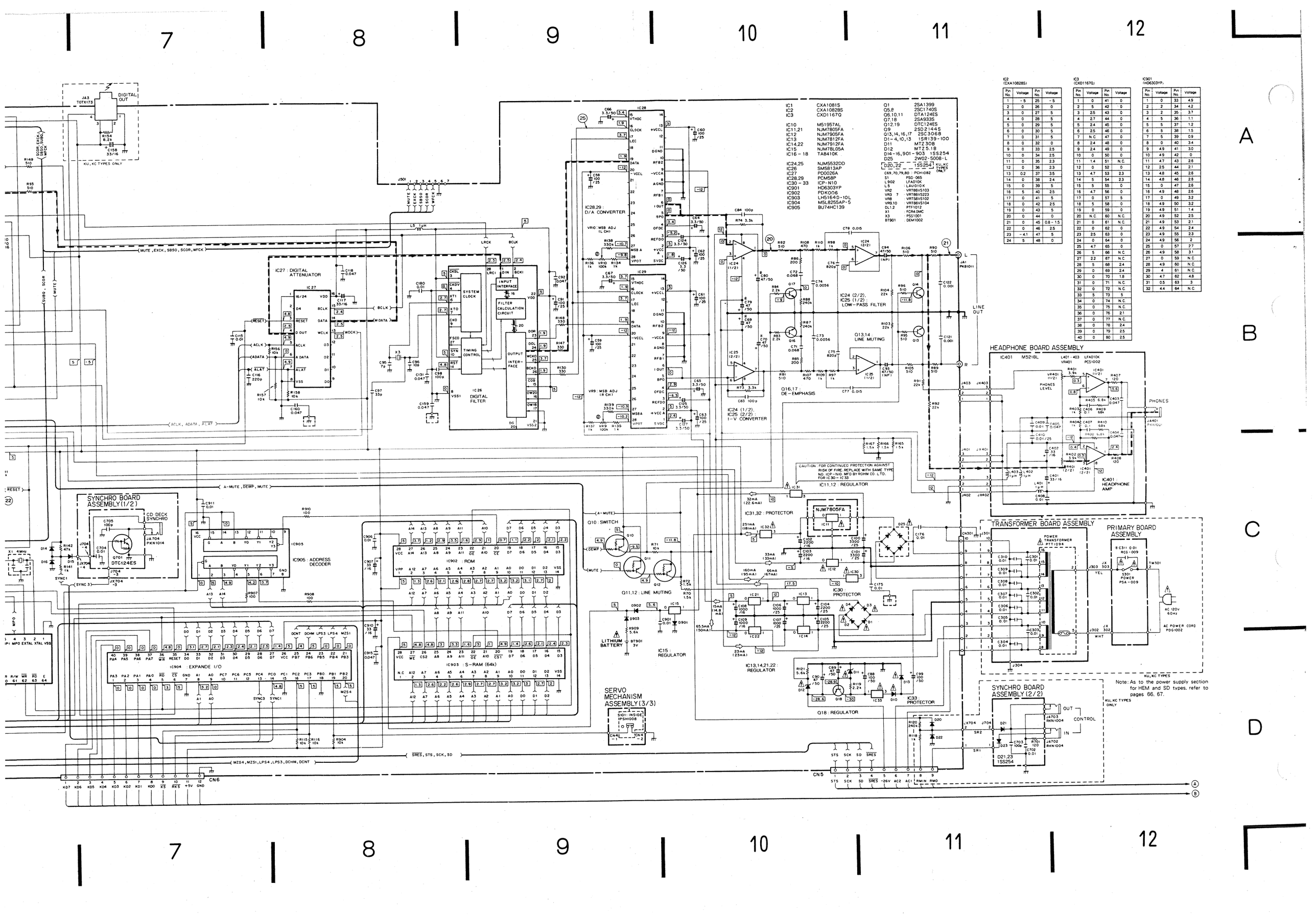
SWITCHES

Select Board Assembly

SWITCHES

7. SCHEMATIC DIAGRAM



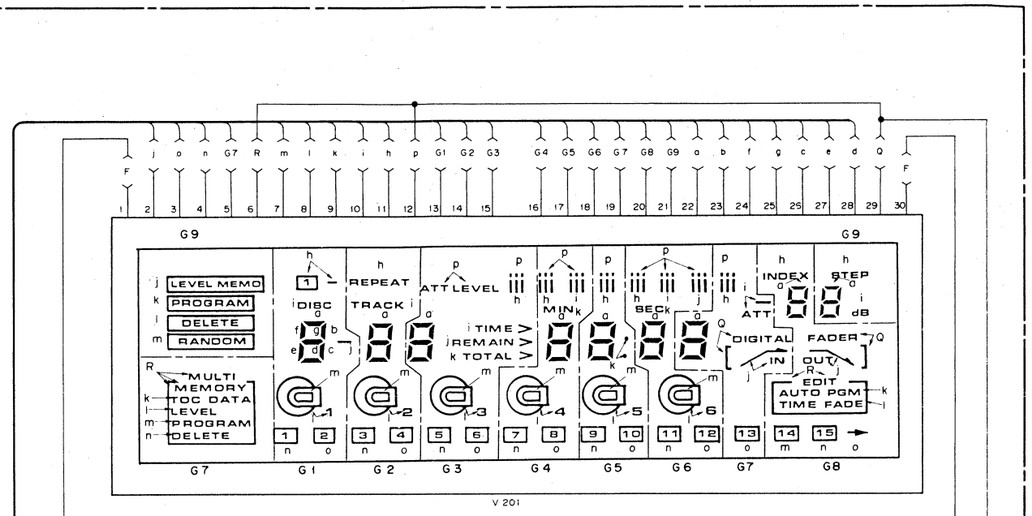


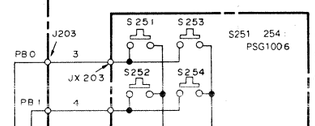
IC2 (CXA1082BS)			
Pin No.	Voltage	Pin No.	Voltage
1	- 5	25	- 5
2	0	26	0
3	0	27	5
4	0	28	5
5	0	29	5
6	0	30	5
7	0	31	5
8	0	32	0
9	0	33	2.5
10	0	34	2.5
11	0	35	2.3
12	0	36	2.3
13	0.2	37	3.5
14	0	38	2.4
15	0	39	5
16	5	40	2.5
17	0	41	5
18	0	42	2.5
19	0	43	5
20	0	44	0
21	0	45	0.8 - 1.5
22	0	46	2.5
23	- 4.1	47	5
24	5	48	0

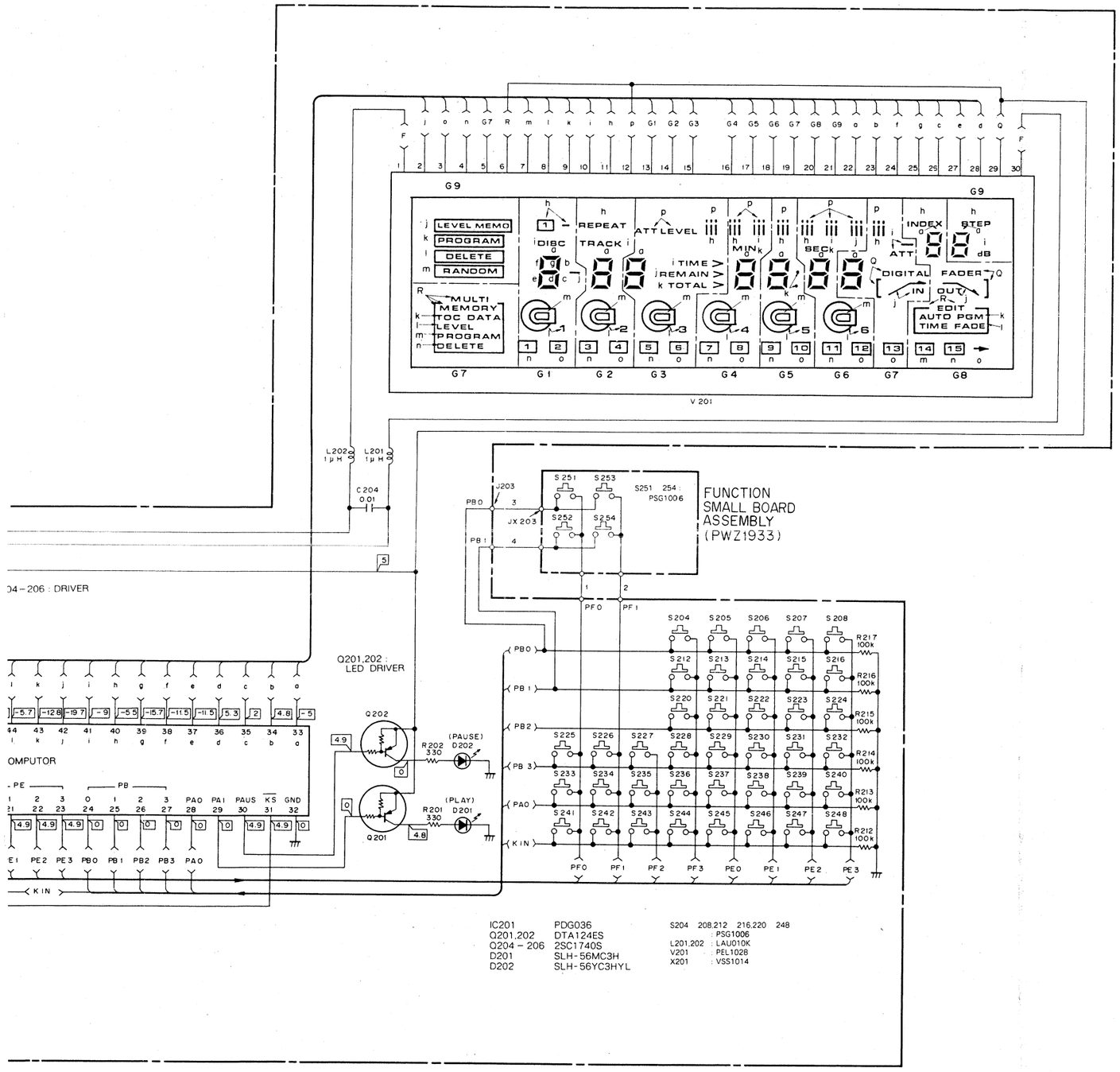
IC3 (CXD1167Q)			
Pin No.	Voltage	Pin No.	Voltage
1	0	41	0
2	5	42	0
3	2.5	43	0
4	2.7	44	0
5	2.4	45	0
6	2.5	46	0
7	N.C	47	0
8	2.4	48	0
9	2.4	49	0
10	0	50	0
11	1.4	51	N.C.
12	0	52	0
13	4.7	53	2.3
14	5	54	2.3
15	5	55	0
16	4.7	56	0
17	0	57	5
18	5	58	0
19	0	59	0
20	N.C.	60	N.C.
21	0	61	N.C.
22	0	62	0
23	2.5	63	0
24	0	64	0
25	4.7	65	0
26	5	66	N.C.
27	2.2	67	N.C.
28	5	68	2.4
29	0	69	2.4
30	0	70	1.8
31	0	71	N.C.
32	0	72	N.C.
33	5	73	5
34	0	74	N.C.
35	0	75	N.C.
36	0	76	2.1
37	0	77	N.C.
38	0	78	2.4
39	0	79	2.5
40	0	80	2.5

IC901 (HD6303YP)			
Pin No.	Voltage	Pin No.	Voltage
1	0	33	4.9
2	0	34	4.2
3	2	35	3.7
4	5	36	1.1
5	5	37	1.2
6	5	38	1.5
7	5	39	0.9
8	0	40	3.4
9	4.9	41	3.0
10	4.9	42	0
11	4.7	43	2.6
12	2.5	44	2.1
13	4.8	45	2.6
14	4.8	46	2.6
15	0	47	2.6
16	4.9	48	2.6
17	0	49	3.2
18	4.9	50	3.2
19	4.9	51	1.4
20	4.9	52	2.5
21	4.9	53	2.1
22	4.9	54	2.6
23	4.9	55	2.3
24	4.9	56	2
25	0	57	2.7
26	4.9	58	3.1
27	0	59	N.C.
28	4.9	60	N.C.
29	4	61	N.C.
30	4.7	62	4.8
31	0.5	63	3
32	4.4	64	N.C.

FUNCTION BOARD ASSEMBLY (PWZ1932 : KU, KC TYPES) (PWZ1934 : HEM, SD TYPES)







1. RESISTORS :
Indicated in Ω, 1/4W, 1/6W and 1/8W, ± 5 % tolerance unless otherwise noted k ; kΩ, M ; MΩ, (F) ; ± 1 %, (G) ; ± 2 %, (K) ; ± 10 %, (M) ; ± 20 % tolerance.

2. CAPACITORS :
Indicated in capacity (μF) / voltage (V) unless otherwise noted p ; pF. Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE, CURRENT :
⏍ ; DC voltage (V) at play state.
⇦mA ; DC current at play state.
Value in ( ) is DC current at stop state.

4. OTHERS :
➡ ; Signal route.
⊘ ; Adjusting point.
The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
※ marked capacitors and resistors have parts numbers.
▶ : Measurement point

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

5. SWITCHES : (The underlined indicates the switch position)
OUTSIDE OF P. C. BOARDS ASSEMBLY
S101 : INSIDE ON — OFF
MAIN BOARD ASSEMBLY
S1 : TEST MODE ON — OFF
FUNCTION BOARD ASSEMBLY
S204 : DELETE] MODE
S205 : CLEAR]
S206 : CHEK] PROGRAM
S207 : PGM]
S208 : DISC 1
S212 : + 10
S213 : 3
S214 : 2
S215 : 1
S216 : DISC 2
S220 : ≧ 20
S221 : 6
S222 : 5
S223 : 4
S224 : DISC 3
S225 : LEVEL –
S226 : TIME FADE EDIT
S227 : DISC 4
S228 : LEVEL +
S229 : 9
S230 : 8
S231 : 7
S232 : AUTO PROGRAM EDIT
S233 : EJECT (△)
S234 : STOP (□)
S235 : PAUSE (▯▯)
S236 : 10
S237 : PLAY (▷)
S238 : |◁◁] TRACK SEARCH
S239 : ▷▷|]
S240 : DISC 6
S241 : /IN
S242 : ←] INDEX SEARCH] AUTO FADER
S243 : →]
S244 : OUT
S245 : RANDOM PLAY
S246 : ◁◁] MANUAL SEARCH
S247 : ▷▷]
S248 : DISC 5

FUNCTION SMALL BOARD ASSEMBLY
S251 : TIME
S252 : REPEAT
S253 : STORE] MULTI
S254 : ERASE] MEMORY
PRIMARY BOARD ASSEMBLY
S301 : POWER ON — OFF

SWITCH BOARD ASSEMBLY
S601 : LPS3] LOADING POSITION
S602 : LPS4]

	STOP	DURING THE LOADING	CLAMP CONDITION PLAY	DURING THE EJECT
S601	ON (L)	OFF (H)	OFF (H)	ON (L)
S602	ON (L)	ON (L)	OFF (H)	OFF (H)

S603 : MZS1] MAGAZINE
S604 : MZS4]

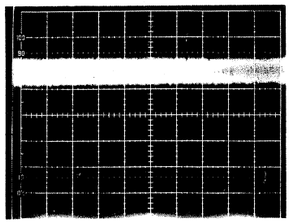
	NO MAGAZINE	SIX MAGAZINES	SINGLE
S603	OFF (H)	ON (L)	ON (L)
S604	OFF (H)	ON (L)	OFF (H)

SELECT BOARD ASSEMBLY
S605 : DCHM] DISC POSITION
S606 : DCNT]

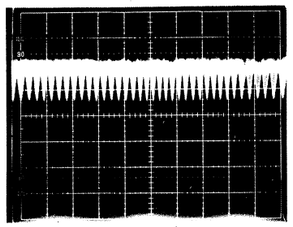
Wave Forms

NOTE : The encircled numbers denote measuring points in the schematic diagram.

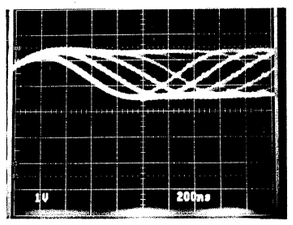
① CN11-5 Pin : PLAY MODE
50mV/div 5msec/div



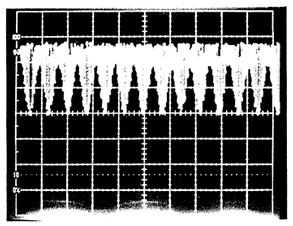
① CN11-5 Pin : SEARCH MODE
50mV/div 5msec/div



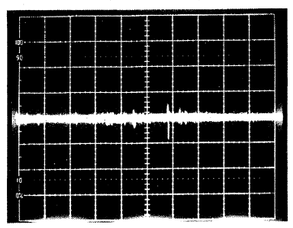
② TP1-1 Pin : PLAY MODE
1V/div 200nsec/div



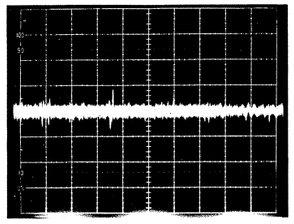
② TP1-1 Pin : SEARCH MODE
500mV/div 100μsec/div



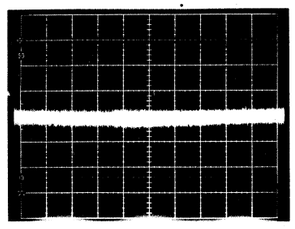
③ TP1-6 Pin : PLAY MODE
500mV/div 10msec/div



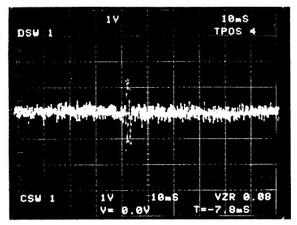
③ TP1-6 Pin : SEARCH MODE
500mV/div 10msec/div



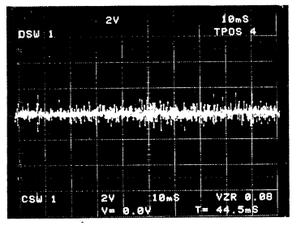
④ TP1-2 Pin : PLAY MODE
1V/div 10msec/div



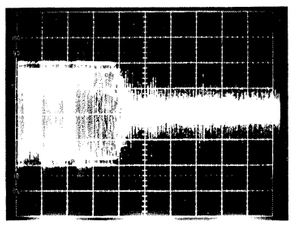
④ TP1-2 Pin : SEARCH MODE
1V/div 10msec/div



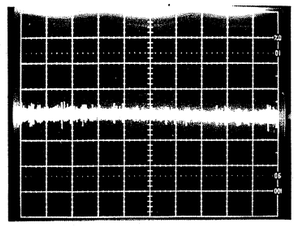
⑤ IC18-2 Pin : PLAY MODE
2V/div 10msec/div



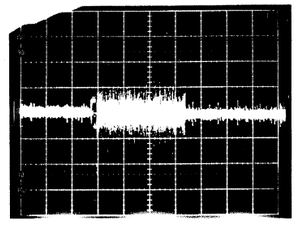
⑤ IC18-2 Pin : SEARCH MODE
2V/div 10msec/div



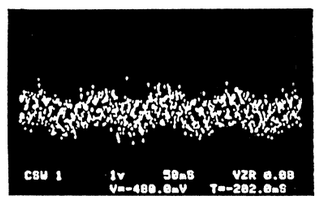
⑥ IC18-8 Pin : PLAY MODE
2V/div 10msec/div



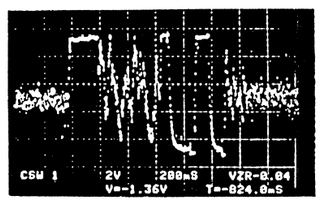
⑥ IC18-8 Pin : SEARCH MODE
2V/div 10msec/div



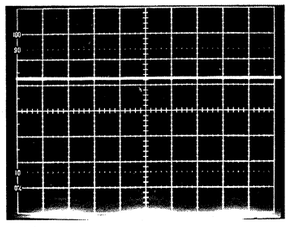
⑦ IC17-9 Pin : PLAY MODE
1V/div 50msec/div



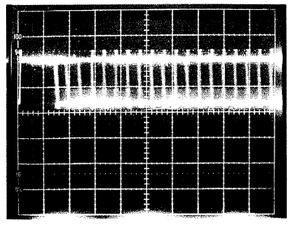
⑦ IC17-9 Pin : SEARCH MODE
2V/div 200msec/div



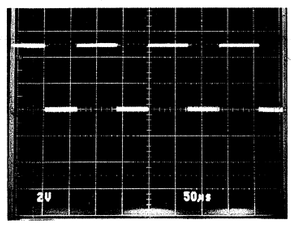
⑧ IC2-33, 34 Pin : PLAY MODE
2V/div 10msec/div



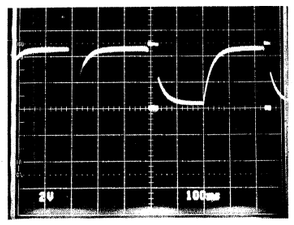
⑨ IC1-27 Pin : PLAY MODE
2V/div 500nsec/div



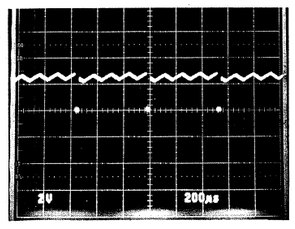
⑩ IC3-4 Pin : PLAY MODE
2V/div 50μsec/div



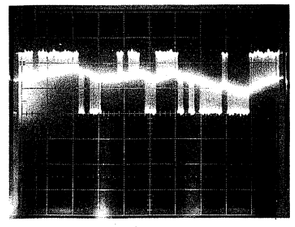
⑩ IC3-4 Pin : SEARCH MODE
2V/div 100msec/div



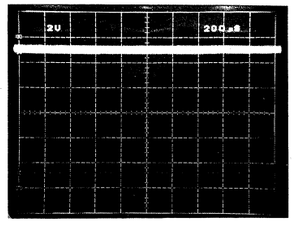
⑪ IC3-3 Pin : PLAY MODE
2V/div 200μsec/div



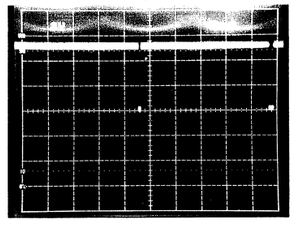
⑪ IC3-3 Pin : SEARCH MODE
2V/div 10msec/div



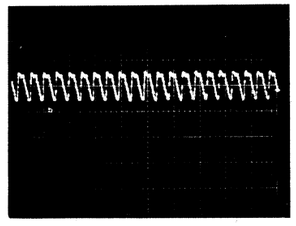
⑫ TP2-1 Pin : PLAY MODE
2V/div 200μsec/div



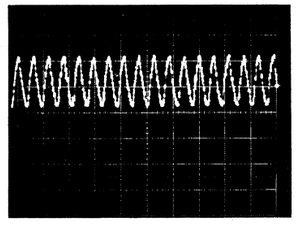
⑫ TP2-1 Pin : SEARCH MODE
2V/div 20msec/div



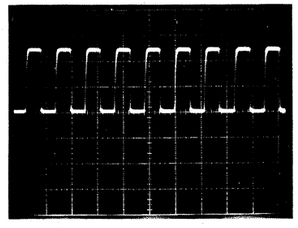
⑬ IC2-38 Pin : PLAY MODE
2V/div 200nsec/div



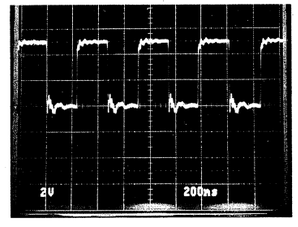
⑭ IC3-8 Pin : PLAY MODE
2V/div 200nsec/div



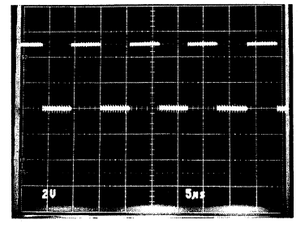
⑮ TP2-2 Pin : PLAY MODE
2V/div 200nsec/div



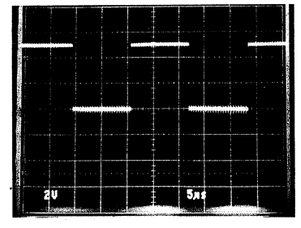
⑯ IC3-76 Pin : STOP MODE
2V/div 200nsec/div



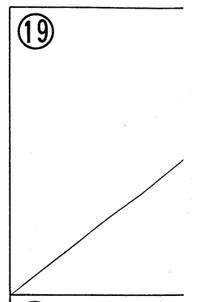
⑰ IC3-78 Pin : STOP MODE
2V/div 5μsec/div



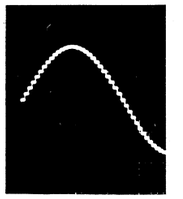
⑱ IC3-80 Pin : STOP MODE
2V/div 5μsec/div



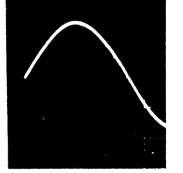
⑲



⑳ IC5-1 Pin : PLA
2V/div 50μ

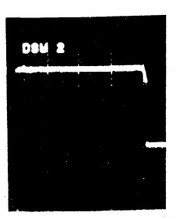


㉑ OUTPUT Lch :
2V/div 50μ

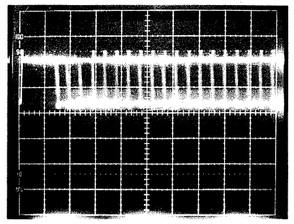


㉒ IC10-5 Pin : PO
2V/div 100

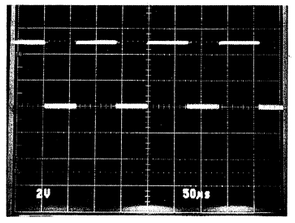
㉒ IC10-5 Pin : PO
2V/div 100



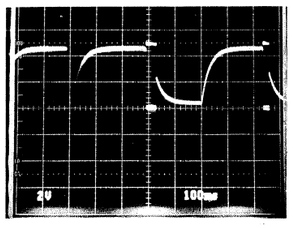
⑨ IC1-27 Pin : PLAY MODE
2V/div 500nsec/div



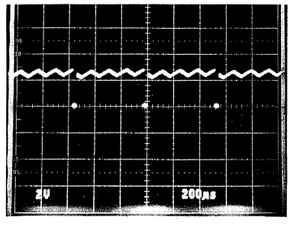
⑩ IC3-4 Pin : PLAY MODE
2V/div 50μsec/div



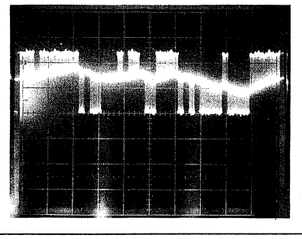
⑩ IC3-4 Pin : SEARCH MODE
2V/div 100msec/div



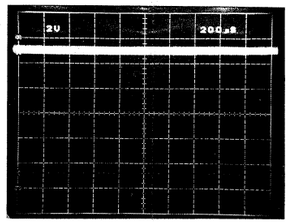
⑪ IC3-3 Pin : PLAY MODE
2V/div 200μsec/div



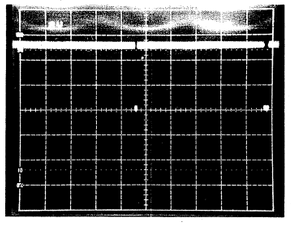
⑪ IC3-3 Pin : SEARCH MODE
2V/div 10msec/div



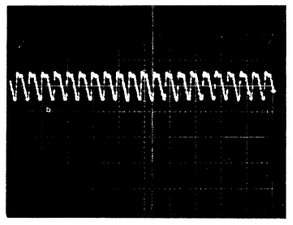
⑫ TP2-1 Pin : PLAY MODE
2V/div 200μsec/div



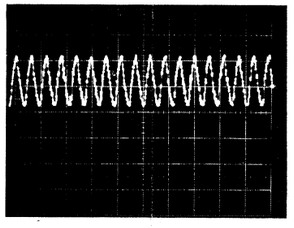
⑫ TP2-1 Pin : SEARCH MODE
2V/div 20msec/div



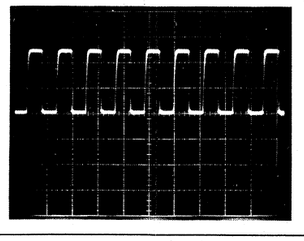
⑬ IC2-38 Pin : PLAY MODE
2V/div 200nsec/div



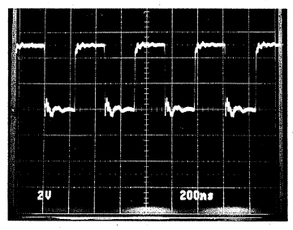
⑭ IC3-8 Pin : PLAY MODE
2V/div 200nsec/div



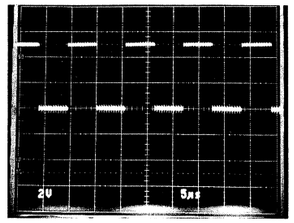
⑮ TP2-2 Pin : PLAY MODE
2V/div 200nsec/div



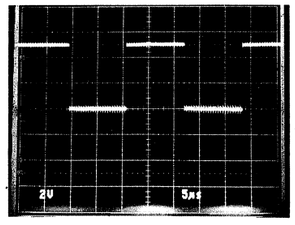
⑯ IC3-76 Pin : STOP MODE
2V/div 200nsec/div



⑰ IC3-78 Pin : STOP MODE
2V/div 5μsec/div

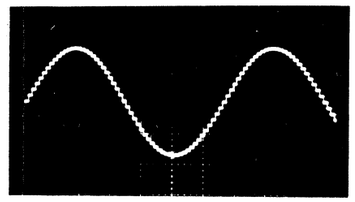


⑱ IC3-80 Pin : STOP MODE
2V/div 5μsec/div

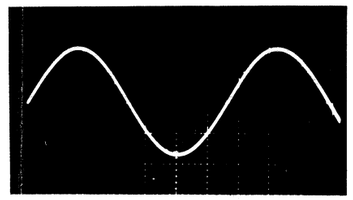


⑲

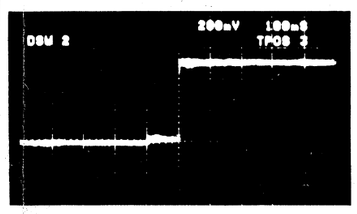
⑳ IC5-1 Pin : PLAY MODE
2V/div 50μsec/div



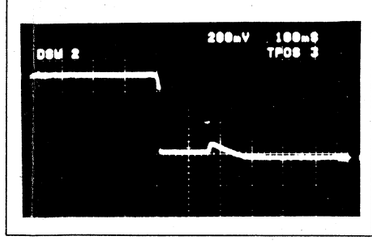
㉑ OUTPUT Lch : PLAY MODE
2V/div 50μsec/div



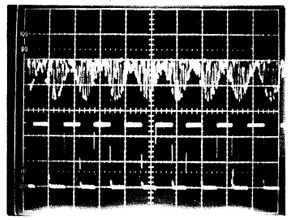
㉒ IC10-5 Pin : POWER ON
2V/div 100msec/div



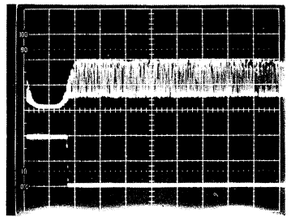
㉒ IC10-5 Pin : POWER OFF
2V/div 100msec/div



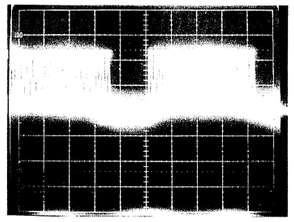
㉓ IC1-22 Pin : TRACKING OPEN
0.1msec/div
Upper TP1-1 Pin : 1V/div
Lower IC1-22 Pin : 2V/div



㉔ IC1-21 Pin : DFCT 0.5msec/div
Upper TP1-1 Pin : 1V/div
Lower IC1-21 Pin : 5V/div



㉕ IC28, 29-16 Pin : PLAY MODE
2V/div 0.5μsec/div



8. P. C. BOARDS CONNECTION DIAGRAM

P.C.B. pattern diagram indication	Corresponding part symbol	Part name
		Transistor
		FET
		Diode
		Zenner diode
		LED
		Varactor
		Tact switch
		Inductor
		Coil
		Transformer
		Filter
		Ceramic capacitor
		Mylar capacitor
SA		Styrol capacitor
NP		Electrolytic capacitor (Non polarized)
NL		Electrolytic capacitor (Noiseless)
		Electrolytic capacitor (Polarized)
		Electrolytic capacitor (Polarized)
		Power capacitor
		Semi-fixed resistor
		Resistor array
		Resistor
		Resonator
		Thermistor

1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table.
3. The capacitor terminal marked with ▭ shows negative terminal.
4. The diode marked with O shows cathode side.
5. The transistor terminal marked with ▭ shows emitter.

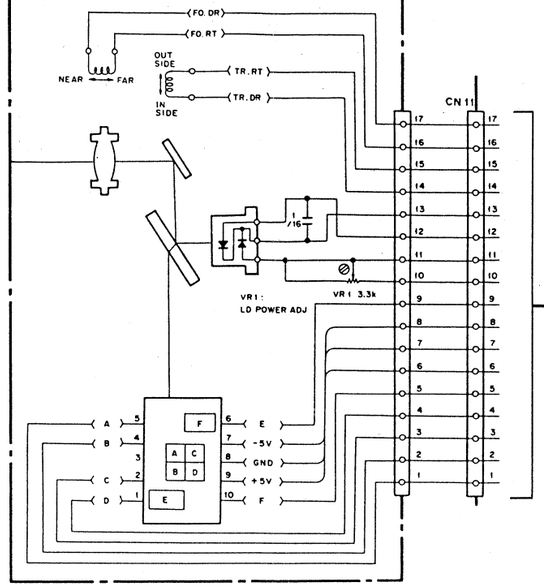
IC3 (CXD1167Q)

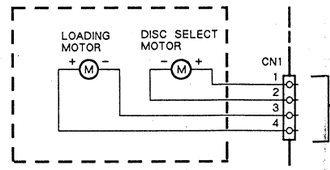
Pin No.	Voltage	Pin No.	Voltage
1	0	41	0
2	5	42	0
3	2.5	43	0
4	2.7	44	0
5	2.4	45	0
6	2.5	46	0
7	N.C.	47	0
8	2.4	48	0
9	2.4	49	0
10	0	50	0
11	1.4	51	N.C.
12	0	52	0
13	4.7	53	2.3
14	5	54	2.3
15	5	55	0
16	4.7	56	0
17	0	57	5
18	5	58	0
19	0	59	0
20	N.C.	60	N.C.
21	0	61	N.C.
22	0	62	0
23	2.5	63	0
24	0	64	0
25	4.7	65	0
26	5	66	N.C.
27	2.2	67	N.C.
28	5	68	2.4
29	0	69	2.4
30	0	70	1.8
31	0	71	N.C.
32	0	72	N.C.
33	5	73	5
34	0	74	N.C.
35	0	75	N.C.
36	0	76	2.1
37	0	77	N.C.
38	0	78	2.4
39	0	79	2.5
40	0	80	2.5

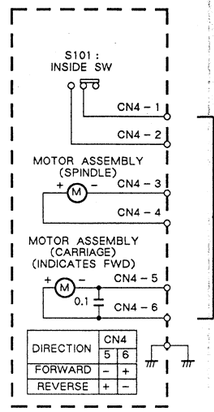
IC901 (HD6303YP)

Pin No.	Voltage	Pin No.	Voltage
1	0	33	4.9
2	2	34	4.2
3	2	35	3.7
4	5	36	1.1
5	5	37	1.2
6	5	38	1.5
7	5	39	0.9
8	0	40	3.4
9	4.9	41	3.0
10	4.9	42	0
11	4.7	43	2.6
12	2.5	44	2.1
13	4.8	45	2.6
14	4.8	46	2.8
15	0	47	2.6
16	4.9	48	2.6
17	0	49	3.2
18	4.9	50	3.2
19	4.9	51	1.4
20	4.9	52	2.5
21	4.9	53	2.1
22	4.9	54	2.4
23	4.9	55	2.3
24	4.9	56	2
25	0	57	2.7
26	4.9	58	3.1
27	0	59	N.C.
28	4.9	60	N.C.
29	4	61	N.C.
30	4.7	62	4.8
31	0.5	63	3
32	4.4	64	N.C.

PICKUP ASSEMBLY (PWY1009)

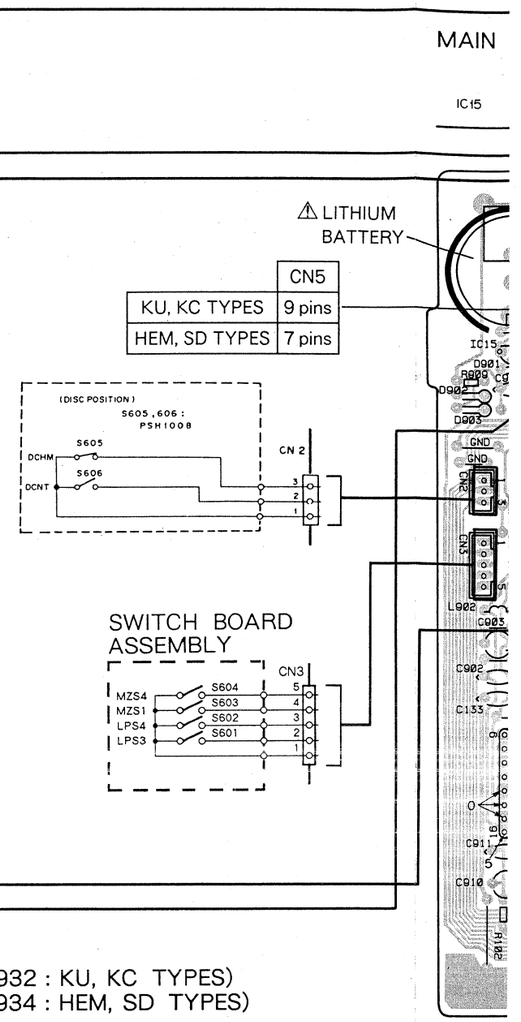






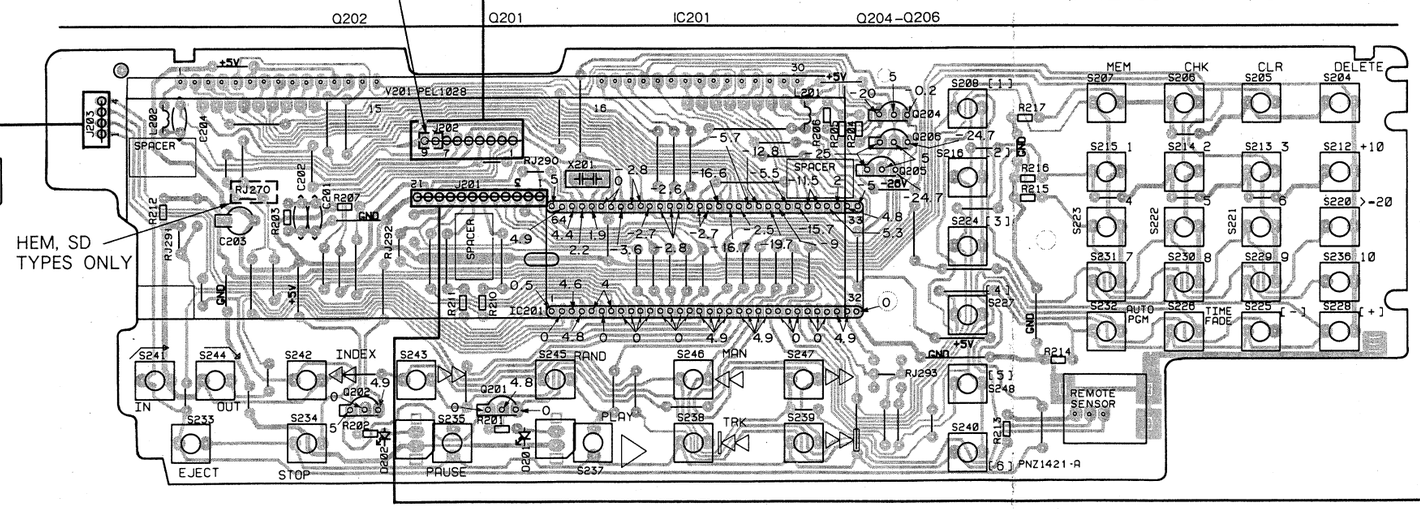
SERVO MECHANISM ASSEMBLY

MAIN

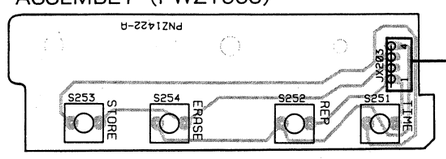


	J202
KU, KC TYPES	9 pins
HEM, SD TYPES	7 pins

FUNCTION BOARD ASSEMBLY (PWZ1932 : KU, KC TYPES)
(PWZ1934 : HEM, SD TYPES)

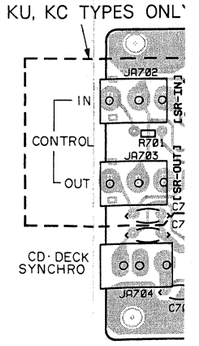


FUNCTION SMALL BOARD ASSEMBLY (PWZ1933)



HEM, SD TYPES ONLY

KU, KC TYPES ONLY



SYNCHRO ASSEMBLY

MAIN BOARD ASSEMBLY (PWZ1835 : KU, KC TYPES) (PWZ1840 : HEM, SD TYPES)

Note : As to the power supply section for HEM and SD types, refer to pages 66, 67.

⚠ LITHIUM BATTERY

CN5
PES 9 pins
'PES 7 pins

KU, KC TYPES ONLY

PWM1274 KU, KC TYPES 1276 1321 ONLY

KU, KC TYPES ONLY

KU, KC TYPES ONLY

KU, KC TYPES ONLY

KU, KC TYPES ONLY

KU, KC TYPES

TRANSFORMER BOARD ASSEMBLY

PRIMARY BOARD ASSEMBLY

AC120V 60Hz

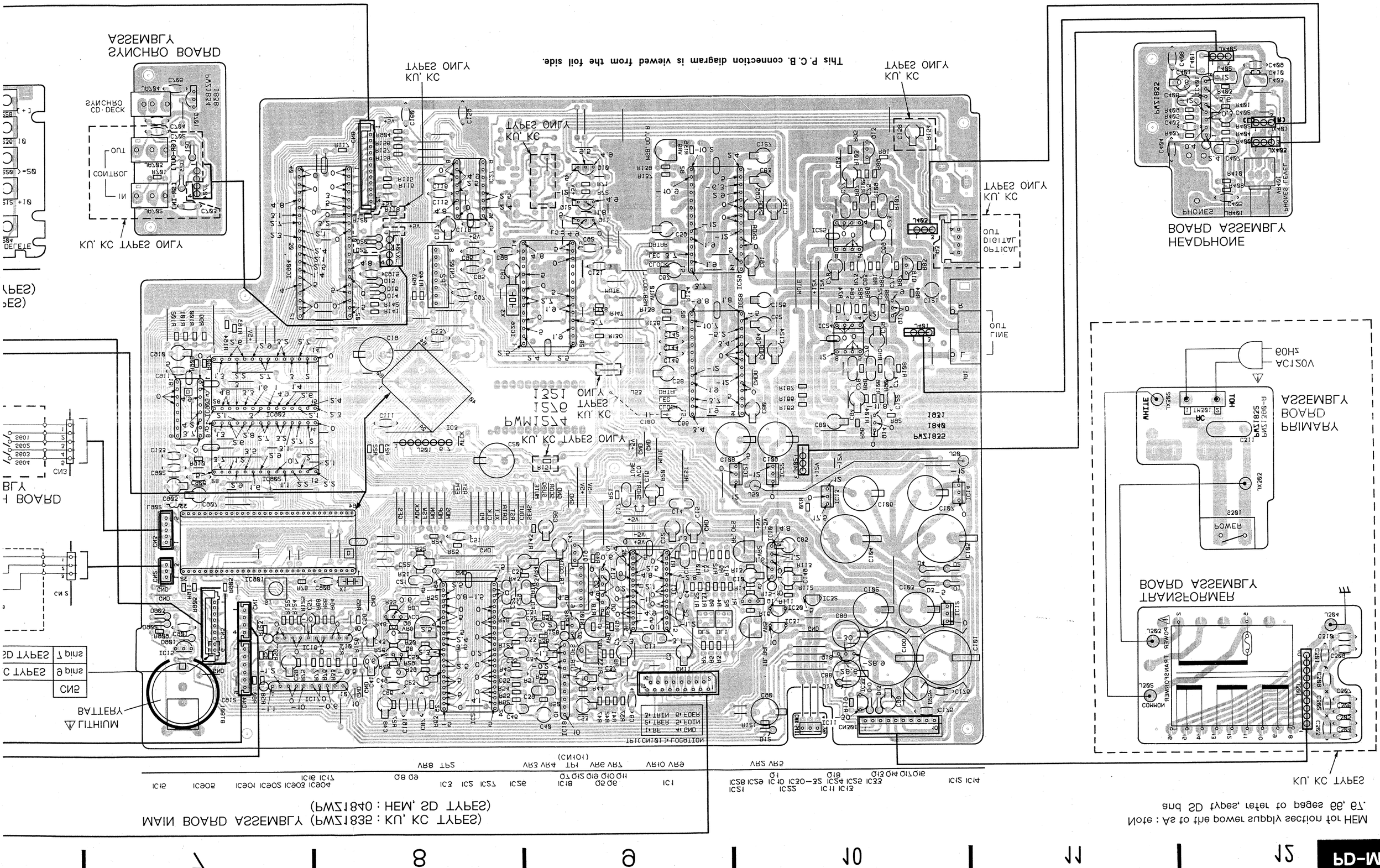
LINE OUT

OPTICAL DIGITAL OUT

KU, KC TYPES ONLY

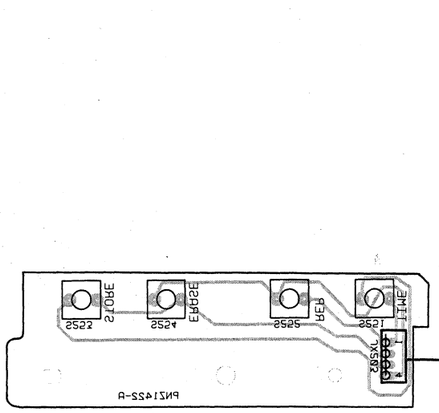
HEADPHONE BOARD ASSEMBLY

SYNCHRO BOARD ASSEMBLY

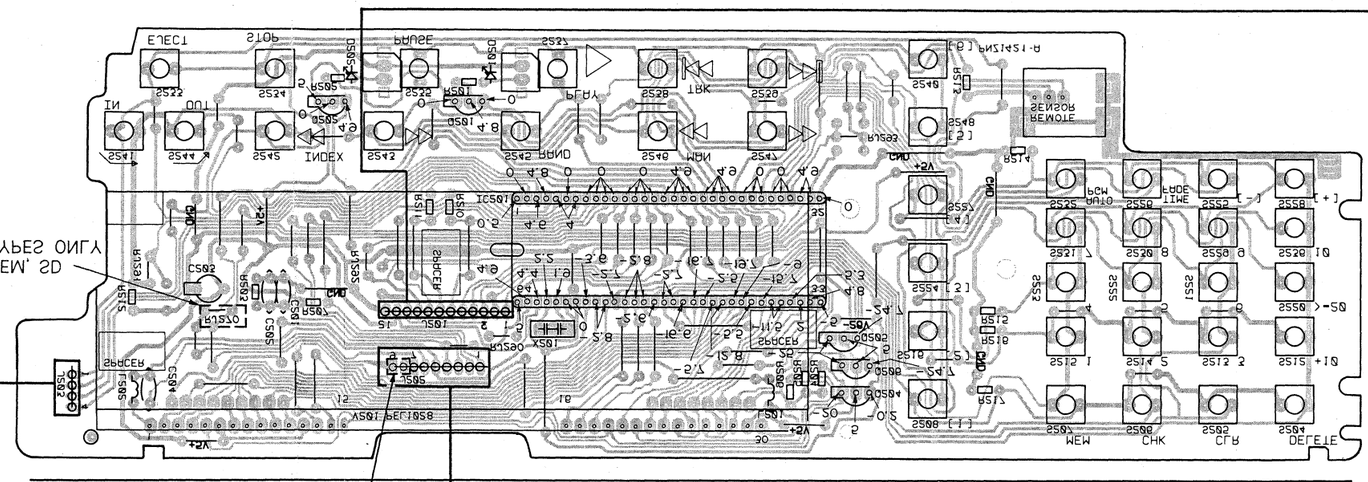

This P.C.B. connection diagram is viewed from the foil side.
TYPE2 ONLY
KU, KC
KU, KC TYPE2 ONLY
PWM1524
KU, KC TYPE2 ONLY
PWZ1832
KU, KC TYPE2 ONLY
PWZ1822
KU, KC TYPE2 ONLY
SYNCHRO BOARD ASSEMBLY
SYNCHRO CD DECK
CONTROL
IN
OUT
KU, KC TYPE2 ONLY
BOARD ASSEMBLY
HEADPHONE
PHONES
OPTICAL
DIGITAL
OUT
LINE
OUT
BOARD ASSEMBLY
PRIMARY
POWER
AC120V
60Hz
BOARD ASSEMBLY
TRANSFORMER
KU, KC TYPE2
MAIN BOARD ASSEMBLY (PWZ1832 : KU, KC TYPE2)
(PWZ1840 : MEM, 2D TYPE2)
CN3
9 pins
7 pins
C TYPE2
2D TYPE2
BATTERY
LITHIUM
Note : As to the power supply section for MEM and 2D types, refer to pages 66, 67.

8. P. C. BOARDS CONNECTION DIAGRAM

FUNCTION SMALL BOARD
ASSEMBLY (PWZ1693)

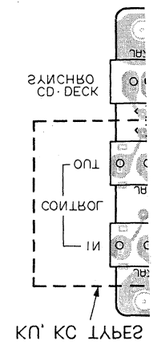


TYPES ONLY
HEM. 2D

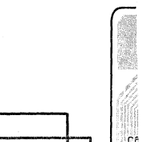


HEM. 2D TYPES	7 pins
KU. KC TYPES	9 pins
JCS01	

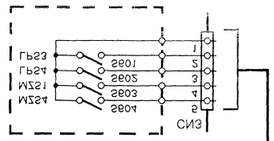
FUNCTION BOARD ASSEMBLY (PWZ1693 : KU. KC TYPES)
(PWZ1694 : HEM. 2D TYPES)

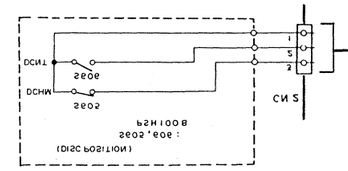


KU. KC TYPES



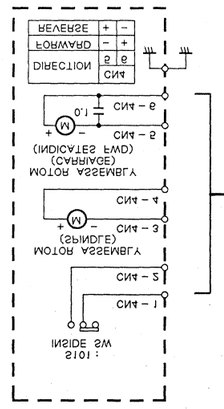
SWITCH BOARD
ASSEMBLY



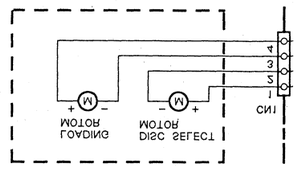


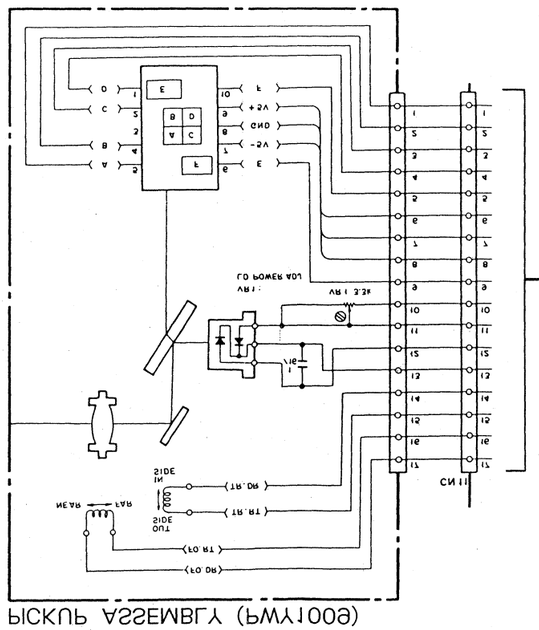
HEM. 2D TYPES	7 pins
KU. KC TYPES	9 pins
CN2	

BATTERY
LITHIUM



SERVO MECHANISM
ASSEMBLY





PICKUP ASSEMBLY (PWY1009)

IC3 (CXD1176Q)			
No.	Voltage	No.	Voltage
1	0	41	0
2	0	42	0
3	2.5	43	0
4	2.7	44	0
5	2.4	45	0
6	2.5	46	0
7	N.C.	47	0
8	2.4	48	0
9	2.4	49	0
10	0	50	0
11	1.4	51	N.C.
12	0	52	0
13	1.7	53	2.3
14	2	54	2.3
15	0	55	0
16	1.7	56	0
17	0	57	2
18	2	58	0
19	0	59	0
20	N.C.	60	N.C.
21	0	61	N.C.
22	2	62	0
23	2.2	63	0
24	2	64	0
25	2.2	65	0
26	1.7	66	0
27	2.5	67	N.C.
28	2	68	2.4
29	0	69	2.4
30	0	70	1.8
31	0	71	N.C.
32	0	72	N.C.
33	2	73	2
34	0	74	N.C.
35	0	75	N.C.
36	0	76	2.4
37	0	77	2.5
38	0	78	2.4
39	0	79	2.5
40	0	80	2.5

IC801 (HD63034B)			
No.	Voltage	No.	Voltage
1	0	33	4.9
2	0.2	34	3
3	5	35	N.C.
4	5	36	3.1
5	5	37	1.5
6	5	38	1.2
7	5	39	0.9
8	0	40	3.4
9	4.9	41	3.6
10	0	42	0
11	4.1	43	3.6
12	0	44	3.6
13	4.8	45	3.6
14	4.8	46	3.6
15	5.2	47	3.7
16	4.9	48	3.6
17	0	49	3.6
18	4.9	50	3.5
19	4.9	51	3.5
20	4.9	52	3.5
21	4.9	53	3.5
22	4.9	54	3.5
23	4.9	55	3.4
24	4.9	56	3.4
25	5	57	3.5
26	4.9	58	3.5
27	4.9	59	3.5
28	4.9	60	N.C.
29	4.9	61	N.C.
30	4.1	62	4.8
31	4.9	63	3.1
32	4	64	N.C.

9. ADJUSTMENTS

The adjustment items of this model should be performed in the order as shown below.

• Adjustment and check Items

1. Tracking offset, focus offset and RF offset adjustments
2. LD (Laser Diode) output power confirmation
3. Focus lock and spindle lock confirmation
4. Grating adjustment
5. Tracking balance adjustment
6. Tangential adjustment
7. RF level adjustment
8. Focus gain adjustment
9. Tracking gain adjustment
10. VCO free-run frequency adjustment
11. Method to confirm S character (FOCUS ERROR)
12. MSB adjustment

• Measuring Equipment

1. Dual trace oscilloscope
2. Laser power meter
3. Test disc (YEDS-7)
4. Tracking balance adjustment filter
5. Loop gain adjustment filter
6. Signal generator
7. Frequency counter
8. Other general tools

• Test Mode

Test Mode setting and cancellation procedures

(1) To set the Test Mode, turn the POWER switch of the player (S301) ON pushing the TEST MODE SWITCH (S1).
(2) To canacel the Test Mode, simply turn the POWER switch of the player OFF.

The various key functions in the Test Mode are listed in Table 9-1.

• Adjustment VRs and their names

VR1 : Laser power
VR2 : RF offset (RF. OFS)
VR3 : Focus gain (FCS. GAN)
VR4 : Tracking gain (TRK. GAN)
VR5 : Tracking balance (TRK. BAL)
VR6 : Focus offset (FCS. OFS)
VR7 : Tracking offset (TRK. OFS)
VR8 : VCO adjustment (VCO. ADJ)
VR9 : MSB adjustment (R ch)
VR10 : MSB adjustment (L ch)

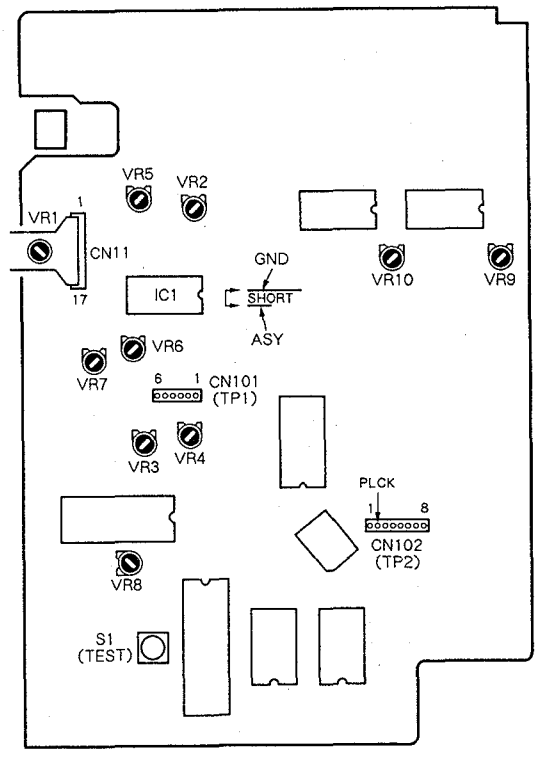
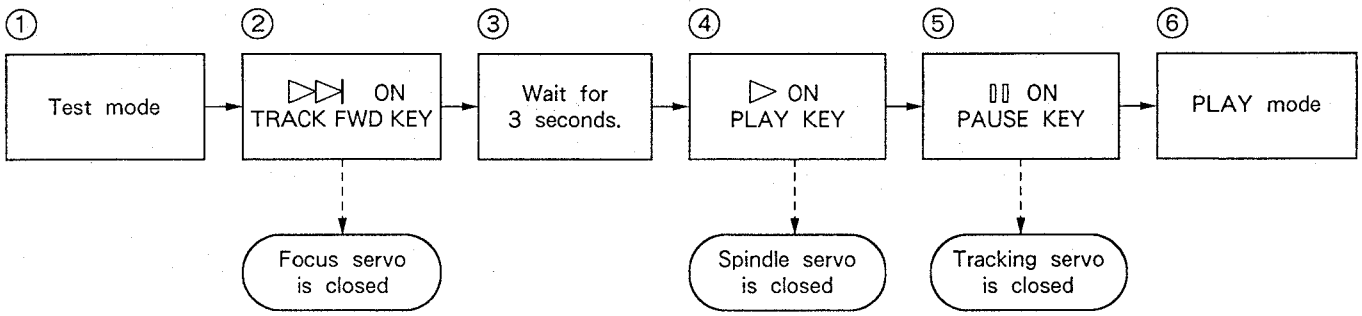


Fig. 9-1 Adjusting point

In the Test Mode each servo circuit can be closed and opened by separate operations. Consequently each servo must be closed one at a time (in serial sequence) to set PLAY mode.
Note that PLAY mode is not activated by simply pressing the PAUSE key (▯▯) in the Test Mode.

Example : Switching from STOP to PLAY mode.

* The each servo mechanisms operate in a serial sequence in the Test Mode.



• Key Functions in Test Mode

Symbol	Key name	Function during test mode	Description
▷▷|	TRACK FWD	Focus servo is closed.	Laser diode lights up. Actuator is moved up/down, then focus servo is closed.
▷	PLAY	Spindle servo is closed.	Spindle starts to rotate and the servo is closed when it turns into the CLV-A servo mode.
▯▯	PAUSE	Tracking servo is closed/opened.	Performs toggle operation. Closing the tracking servo and becomes PLAY mode by depressing the key (Focus servo and spindle servo must be closing), and PAUSE indicator lights up. Tracking servo opens by depressing the key again.
|◁◁	MANUAL SEARCH REV	Carriage moves in reverse direction. (towards disc center)	Carriage is moved towards disc center at a fast speed of about 3 cm/sec. Since there is no safety mechanism to stop the carriage, release the key when the carriage reaches the end.
▷▷|	MANUAL SEARCH FWD	Carriage moves in forward direction. (towards disc end)	Carriage is moved towards disc end at a fast speed of about 3 cm/sec. Since there is no safety mechanism to stop the carriage, release the key when the carriage reaches the end.
□	STOP	STOP	All servos are opened.
⏏	EJECT	(CD Magazine) EJECT	CD Magazine is ejected. However, pickup does not return to the park position. Moreover, even when disc is closed the pickup remains as is.

Table 9-1

Step No.	Oscilloscope Setting V	Oscilloscope Setting H	Test Points	Adjusting Points	Check items/ Adjustment specifications	Adjustment procedure
1	**TRACKING OFFSET, FOCUS OFFSET AND RF OFFSET ADJUSTMENTS**					
			TP1 Pin 2 (TRK. ERR) TP1 Pin 6 (FCS. ERR) TP1 Pin 1 (RF OUTPUT)	VR5 (TRK. BAL) VR7 (TRK. OFS) VR6 (FCS. OFS) VR2 (RF. OFS)	Tracking offset 45° 0V ± 50mV FOCUS offset 0V ± 50mV RF offset 100mV ± 50mV	● Set to TEST mode. (※) ● Turn VR5 TRK. BAL (Tracking balance) volume clockwise 45° from the center. ● Adjust with VR7 TRK. OFS (Tracking offset) volume so that the voltage of pin 2 TRK. ERR (Tracking error) of TP1 becomes 0V ± 50mV. ● Adjust VR6 FCS. OFS (focus offset) so that the FCS. ERR (focus error) voltage at TP1 pin 6 becomes 0V ± 50mV. ● Adjust VR2 RF. OFS (RF offset) so that the RF output voltage at TP1 pin 1 becomes 100mV ± 50mV.
2	**LD (LASER DIODE) OUTPUT POWER CONFIRMATION**					
					Confirmation : less than 0.13mW	● Set to TEST mode. (※) ● Press TRACK FWD key (▷▷|) and turn ON LD (laser diode). ● Place sensor of the laser power meter immediately above the object lens and confirm that the output power of the LD is less than 0.13mW.
3	**FOCUS LOCK AND SPINDLE LOCK CONFIRMATION**					
	0.5V/div	100msec /div	TP1 Pin 1 (RF output)		RF output exists Normal rotation	● Set TEST disc. ● Set to TEST mode. (※) ● Shift the pickup close to the center of the disc by pressing the MANUAL SEARCH FWD key (▷▷). * Note that this step must be performed. ● Observe pin 1 RF (RF output) of TP1 with an oscilloscope and confirm that the RF signal is output after pressing the TRACK FWD key (▷▷|). ● Press PLAY key (▷) and be sure that the disc rotates in normal direction at almost the specified spped (as it is close to the center of the disc, the rotating speed is around 300 rpm) and not rotates abnormally or inversely.

※ : See page 35.

Step No.	Oscilloscope Setting V	Oscilloscope Setting H	Test Points	Adjusting Points	Check items/ Adjustment specifications	Adjustment procedure
4	**GRATING ADJUSTMENT**					

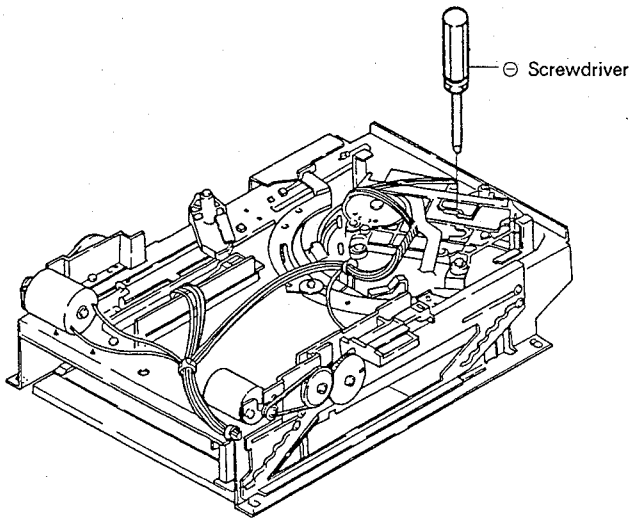


Fig. 9-2

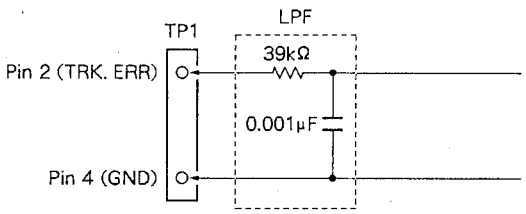


Fig. 9-3

- Set to TEST mode. (※)
- Shift the pickup close to the center of the disc by pressing MANUAL SEARCH FWD key (▷▷) so that the grating adjustment screw of the pickup can be seen through the oval hole of the upper side of the servo mechanism.
- Insert the ⊖ screwdriver into the adjusting hole from the upper side of the mechanism as shown in Fig. 9-2, and confirm that the grating screw turns.
- Press TRACK FWD key (▷▷|) and PLAY key (▷) sequentially and close the focus servo and spindle servo. (Do not close the tracking servo.)
- Observe the waveform of pin 2 TRK. ERR (Tracking error) of TP1 with an oscilloscope. At this point, insert a 4kHz cutoff low-pass filter. (Fig. 9-3)

0.5V/div	5msec /div	TP1 Pin 2 (TRK. ERR)	Grating	Null point	● Turn the ⊖ screwdriver and find null point. (Photo. 9-1)
			Grating	Maximum amplitude	● Then, turn slowly the ⊖ screwdriver counterclockwise from the null point and adjust at the point where the waveform (Tracking error signal) firstly becomes maximum amplitude. (See Photo. 9-2.)

Note :
If the ⊖ screwdriver is pressed strongly, the pickup moves toward disc center, accordingly adjustment becomes difficult.

- Finally, be sure to confirm that the tracking error signal (at this time, 4kHz of cutoff low-pass filter is not inserted) when the pickup is moved toward the disc center and the P-P voltage of the tracking error signal at the outer circumference of the disc are not varied greatly. When the level is deviated over ±10%, adjust again by turning grating screw to the maximum error amplitude point.

※ : See page 35.

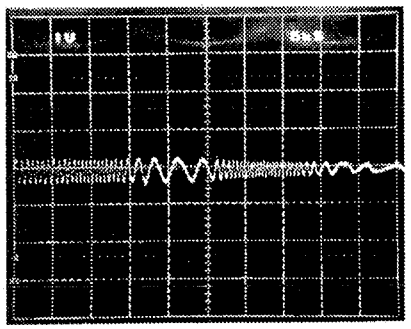


Photo. 9-1
Null point

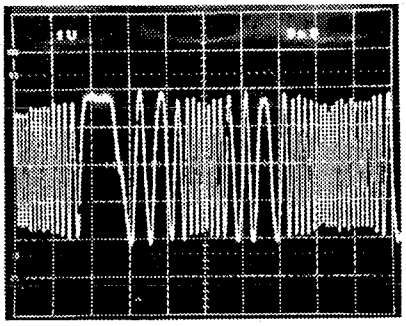


Photo. 9-2
Maximum amplitude

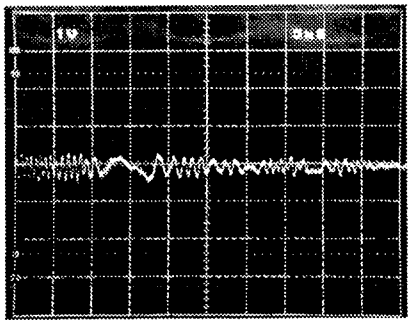
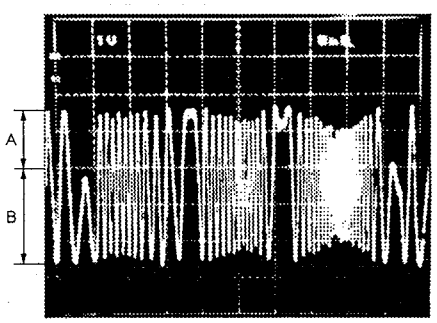


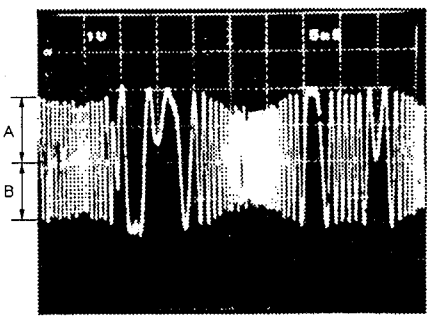
Photo. 9-3
This is not the null-point waveform

Step No.	Oscilloscope Setting V	Oscilloscope Setting H	Test Points	Adjusting Points	Check items/ Adjustment specifications	Adjustment procedure
5	**TRACKING BALANCE ADJUSTMENT**					
	0.5V/div	5msec /div	TP1 Pin 2 (TRK. ERR)	VR5 (TRK. BAL)	(TRK. ERR)	● Set the TEST disc. ● Set to TEST mode. (※) ● Shift the carriage close to the center of the disc by pressing MANUAL SEARCH FWD key (▷▷). ● Press TRACK FWD key (▷▷|), and PLAY key (▷) to start turning the disc. ● Observe pin 2 TRK. ERR (Tracking error) of TP1 with an oscilloscope and adjust with VR5 TRK. BAL (Tracking balance) volume so that the DC component of the tracking error disappears. Note : Before proceeding with the above adjustments, be sure to adjust the tracking error offset.



A ≠ B

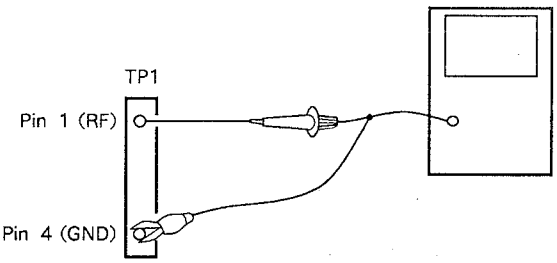
Photo. 9-4 DC elements mixed in signal



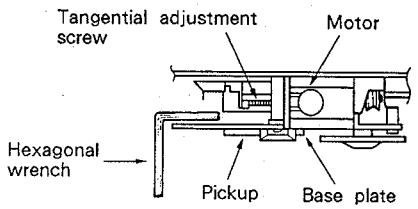
A = B

Photo. 9-5 DC elements eliminated

※ : See page 35.

Step No.	Oscilloscope Setting V	Oscilloscope Setting H	Test Points	Adjusting Points	Check items/ Adjustment specifications	Adjustment procedure
6	**TANGENTIAL ADJUSTMENT**					
		200nsec / div	TP1 Pin 1 (RF output)	Tangential adjustment screw	Best eye pattern	● Set the TEST disc. ● Set to TEST mode. (※) ● Shift the pickup close to the center of the disc by pressing MANUAL SEARCH FWD key (▷▷). ● Press TRACK FWD key (▷▷|), PLAY key (▷) and PAUSE key (▯▯) sequentially, and close all the servos. (Pause indicator lights up.) ● Observe pin 1 RF (RF output) of TP1 with an oscilloscope and adjust with the tangential screw so that the eye pattern becomes clear. (Fig. 9-4 and 9-5) ● The adjusting point is the middle point between the point where the eye pattern becomes deteriorate by turning the tangential screw clockwise and the point where the eye pattern becomes deteriorate by turning the tangential screw counterclockwise. As a criterion, observe that the overall waveform is clear and one of the diamond shapes within the eye pattern (Photo. 9-7), and adjust at as an optimum point where the diamond shape is seen relatively fine line.  Fig. 9-4 Note : During the adjustment, hold hexagonal wrench to upward so as to keep the pickup body not goes down.

※ : See page 35.



In the figure below, the top and bottom is opposite to that of the actual product.

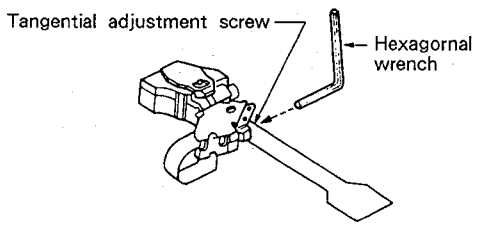


Fig. 9-5 Tangential adjustment

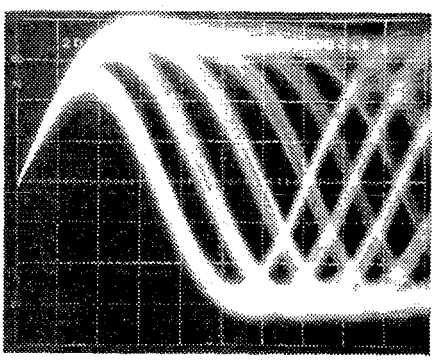


Photo. 9-6

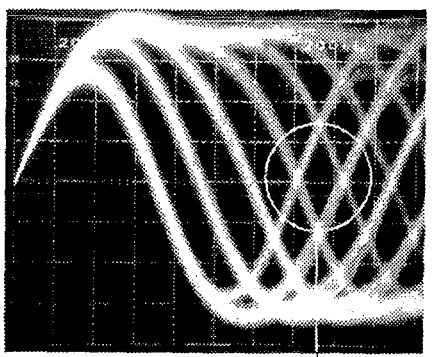


Photo. 9-7

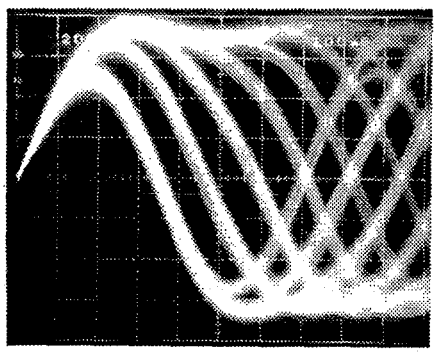
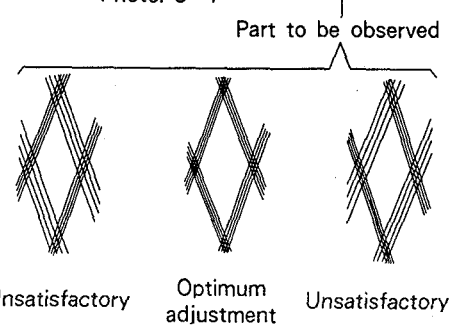


Photo. 9-8



Step No.	Oscilloscope Setting V	Oscilloscope Setting H	Test Points	Adjusting Points	Check items/ Adjustment specifications	Adjustment procedure
7	**RF LEVEL ADJUSTMENT**					
			TP1 Pin 1 (RF)	VR1 Laser power	1.5Vp-p $^{+0.2V}_{-0V}$	● Set to TEST mode. (※) ● Play TEST disc and connect probe of an oscilloscope to pin 1 RF (RF output) of TP1 and measure the P-P voltage of RF waveform. ● Adjust VR1 (Laser power) so that the value is within 1.5Vp-p $^{+0.2V}_{-0V}$.
8	**FOCUS GAIN ADJUSTMENT**					
	20mV/div, 5mV/div. CH1 (X), CH2 (Y) (Probe 10 : 1)		X axis : TP1 Pin 5 (FCS. IN) Y axis : TP1 Pin 6 (FCS. ERR)	VR3 (FCS. GAN)	Phase difference 90°	● In the POWER OFF state, connect an oscilloscope and oscillator as shown in Fig. 9-6. ● Set the unit to the normal PLAY mode. ● Turn the POWER of oscillator ON and output 1.2kHz 2Vp-p. Note : Depending upon oscillators, some of them output DC when their power turned ON. Therefore, it is desirable to connect oscillator after turning the power ON. ● Adjust with VR3 FCS. GAN (Focus gain) volume so that the lissajous figure of the oscilloscope becomes horizontal circle (Phase difference 90°).

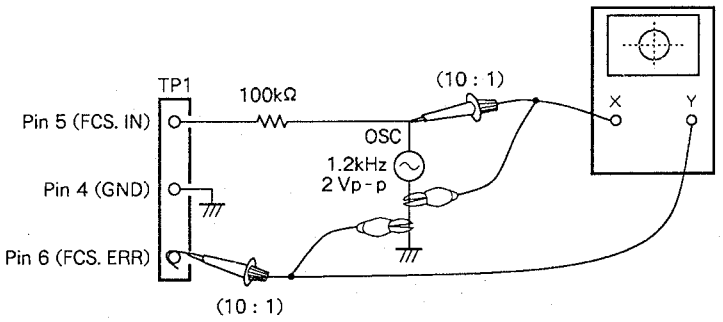


Fig. 9-6

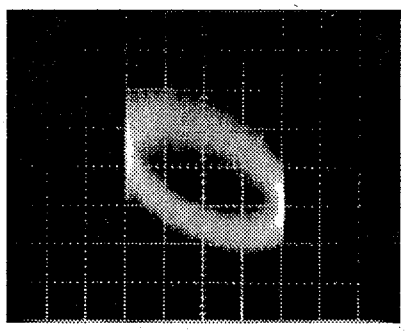


Photo. 9-9
Gain overcompersated

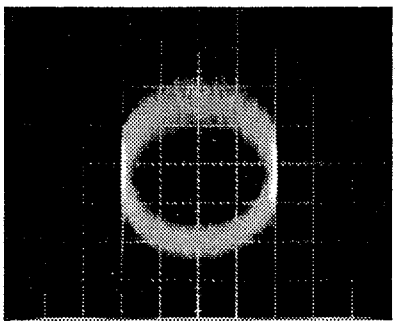


Photo. 9-10
Gain optimum

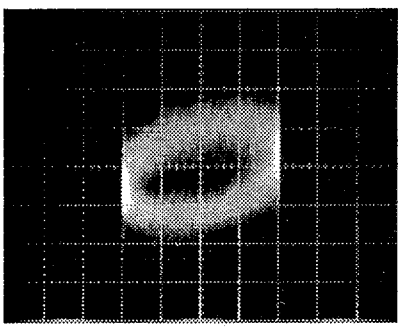


Photo. 9-11
Gain undercompensated

※ : See page 35.

Step No.	Oscilloscope Setting V	Oscilloscope Setting H	Test Points	Adjusting Points	Check items/ Adjustment specifications	Adjustment procedure
9	**TRACKING GAIN ADJUSTMENT**					
	50mV/div, 5mV/div. CH1 (X), CH2 (Y) (Probe 10 : 1)		X axis : TP1 Pin 3 (TRK. IN) Y axis : TP1 Pin 2 (TRK. ERR)	VR4 (TRK. GAN)	Phase difference 90°	● In the POWER OFF state, connect an oscilloscope and oscillator as shown in Fig. 9-7. ● Set the unit to the normal PLAY mode. ● Turn the POWER of oscillator ON and output 1.2kHz 2Vp-p. Note : Depending upon oscillators, some of them output DC when their power turned ON. Therefore, it is desirable to connect oscillator after turning the power ON. ● Adjust with VR4 TRK. GAN (Tracking gain) volume so that the lissajous figure of the oscilloscope becomes horizontal circle (phase difference 90°).

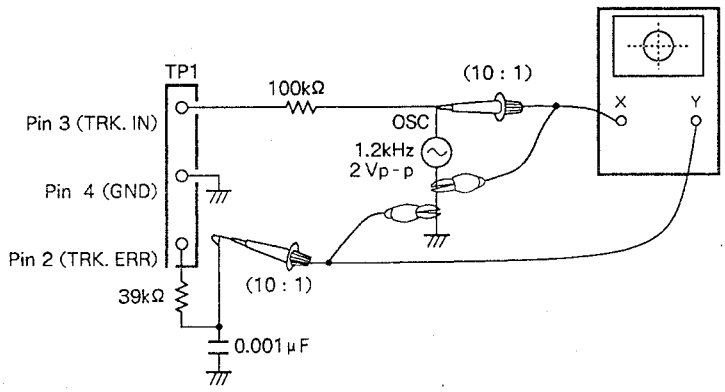


Fig. 9-7

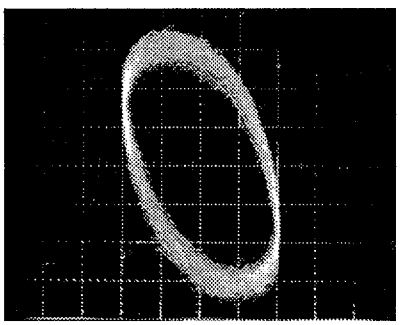


Photo. 9-12
Gain overcompensated

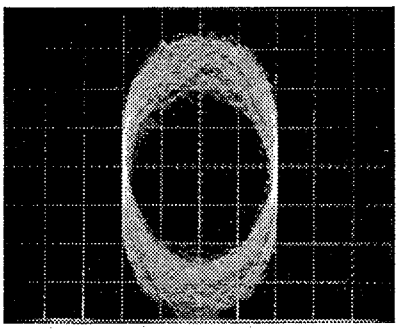


Photo. 9-13
Gain optimum

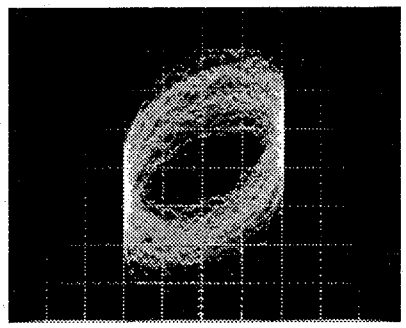
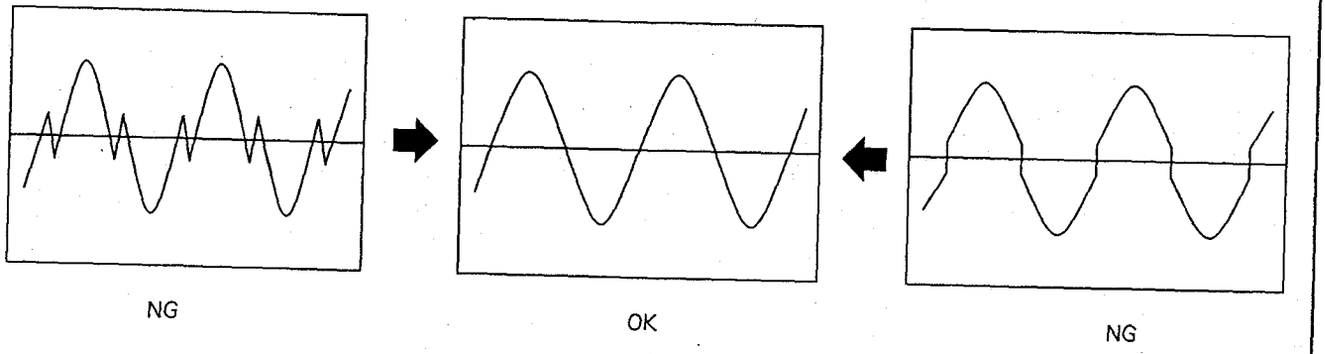


Photo. 9-14
Gain undercompensated

Step No.	Oscilloscope Setting V	Oscilloscope Setting H	Test Points	Adjusting Points	Check items/ Adjustment specifications	Adjustment procedure
10	**VCO FREE-RUN FREQUENCY ADJUSTMENT**					
			TP2 Pin 2 (PLCK)	VR8 (VCO. ADJ)	4.275 ± 0.025MHz	● Set to TEST mode. (※) ● Short-circuit between ASY and GND jumper with ⊖ screwdriver, etc. (Fig. 9-1) ● Connect frequency counter, which is measurable over 10MHz, to pin 2 of TP2 (PLCK). ● Adjust with VR8 VCO. ADJ (VCO adjustment) volume so that the value of frequency counter becomes 4.275 ± 0.025MHz.
11	**METHOD TO CONFIRM S CHARACTER (FOCUS ERROR)**					
			TP1 Pin 6 (FCS. ERR)			● Set to TEST mode. (※) ● Short-circuit between pin 5 FCS. IN (Focus in) of TP1 and GND. ● Press TRACK FWD key (▷▷|) and observe the waveform of pin 6 FCS. ERR (Focus error) of TP1 at that time with an oscilloscope.
12	**MSB ADJUSTMENT**					
	5mV/div	0.2msec /div	JA1 LINE OUT terminal (L CH)	VR10	Sine wave	● Set the unit to the normal PLAY mode. ● Playback the track 20 (−60 dB, 1kHz, Lch, Rch) of the test disc (YEDS-7). Connect the oscilloscope to the Lch of the LINE OUT terminal (JA1), and observe the audio output waveform. ● Adjust VR10 MSB (L ch) so that the sine wave is obtained on the oscilloscope. ● Adjust VR9 (R ch) in the same way.
			JA1 LINE OUT terminal (R CH)	VR9	Sine wave	

● ZERO cross distortion waveform



NG　　OK　　NG

※ : See page 35.

9. RÉGLAGES

Les réglages pour ce modèle doivent être réalisés dans l'ordre indiqué ci-dessous.

• Réglages et vérifications à effectuer

1. Réglages de l'offset de centrage de piste, de l'offset de focalisation et de l'offset RF.
2. Vérification de la puissance de sortie de la diode laser (LD)
3. Vérification du verrouillage de focalisation et du verrouillage de moyeu
4. Réglage du réseau
5. Réglage de l'équilibrage de centrage de piste
6. Réglage tangentiel
7. Réglage du niveau RF
8. Réglage du gain de focalisation
9. Réglage du gain de centrage de piste
10. Réglage de la fréquence propre du VCO
11. Methode de contrôle de la caractéristique S (erreur de focalisation)
12. Réglage de MSB

• Matériel de mesure

1. Oscilloscope double trace
2. Appareil de mesure pour puissance laser
3. Disque d'essai (YEDS-7)
4. Filtre de réglage pour équilibrage de centrage de piste
5. Filtre de réglage pour gain de boucle
6. Générateur de signal
7. Fréquencemètre
8. Outillage général divers

• Mode d'essai

Méthodes de réglage et d'annulation du mode d'essai

(1) Pour régler le mode d'essai, placer l'interrupteur d'alimentation (POWER) du lecteur (S301) sur la position de marche (ON) en appuyant sur l'interrupteur de mode d'essai (TEST MODE SWITCH) (S1).

(2) Pour annuler le mode d'essai, amener simplement l'interrupteur d'alimentation (POWER) du lecteur sur la position d'arrêt (OFF).

Les différentes fonctions des touches dans le mode d'essai sont indiquées dans le tableau 9-1.

• Dispositifs d'ajustement et no menclature

VR1 : Puissance laser
VR2 : Offset RF (RF. OFS)
VR3 : Gain de focalisation (FCS. GAN)
VR4 : Gain de centrage de piste (TRK. GAN)
VR5 : Equilibrage de centrage de piste (TRK. BAL)
VR6 : Décalage de focalisation (FCS. OFS)
VR7 : Décalage de centrage de piste (TRK. OFS)
VR8 : Réglage du VCO (VCO. ADJ)
VR9 : Réglage du MSB (Canal droit)
VR10 : Réglage du MSB (Canal gauche)

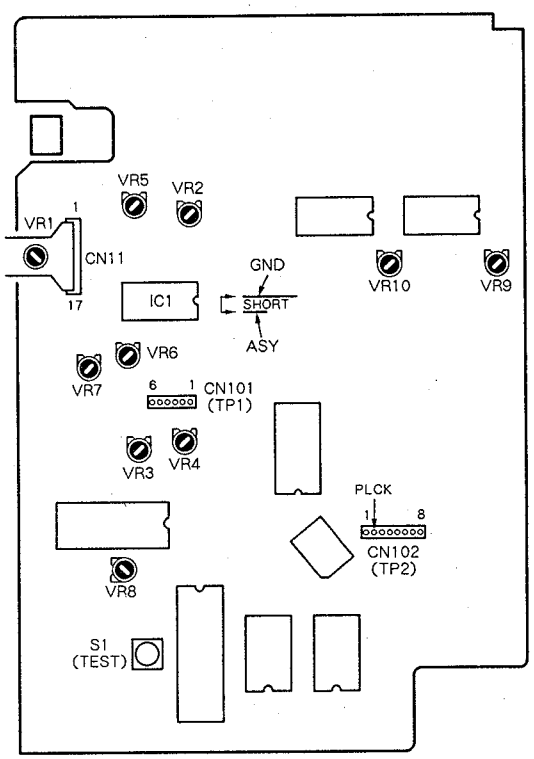


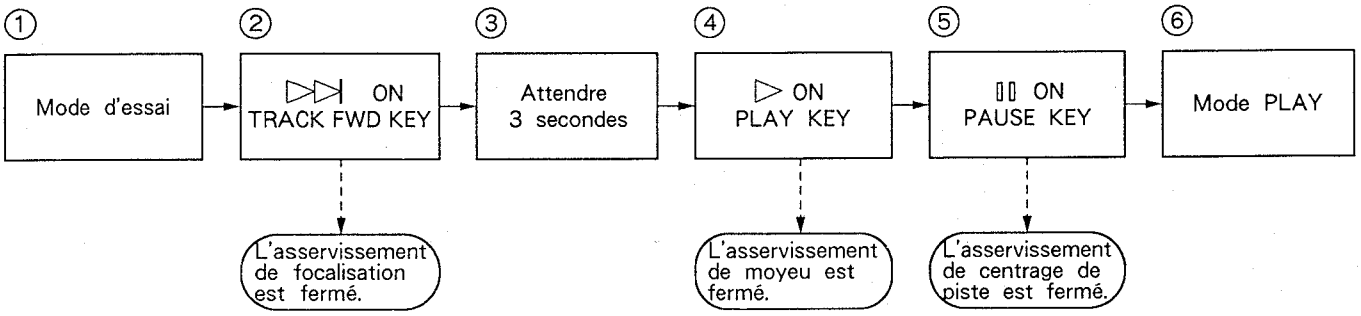
Fig. 9-1 Point de réglage

Dans le mode d'essai (Test Mode), chaque circuit asservi peut être fermé ou ouvert au moyen d'opérations séparées. En conséquence, les asservissements doivent être fermés l'un après l'autre (séquentiellement) pour régler le mode de lecture (PLAY).

Note : Le mode de lecture (PLAY) n'est pas simplement mis en oeuvre par l'enfoncement de la touche PAUSE (▯▯) dans le mode d'essai.

Exemple : Commutation du mode d'arrêt (STOP) au mode de lecture (PLAY).

* Dans le mode d'essai (Test Mode), chaque servo-mécanisme agit séquentiellement.



• Fonction des touches dans le mode d'essai (Test Mode)

Symbole	Désignation de touche	Fonction pendant le mode d'essai	Description
▷▷|	TRACK FWD	Asservissement de focalisation fermé.	La diode laser s'allume. Le moteur d'asservissement se déplace vers le haut/bas, puis l'asservissement de focalisation est fermé.
▷	PLAY	Asservissement de moyeu fermé.	Le moyeu commence à tourner et l'asservissement est fermé lorsqu'il passe dans le mode CLV-A.
▯▯	PAUSE	Asservissement de centrage de piste ouvert/fermé	Réalise l'opération de bascule. Fermeture de l'asservissement de centrage de piste et passage en mode de lecture (PLAY) en appuyant sur la touche (l'asservissement de focalisation et l'asservissement de moyeu doivent de fermer); le voyant de PAUSE s'allume. L'asservissement de centrage de piste s'ouvre par une nouvelle pression sur la touche.
◁◁	MANUAL SEARCH REV	Le chariot se déplace en arrière (vers le centre du disque).	Le chariot se déplace vers le centre du disque à une vitesse élevée d'environ 3 cm/s. Comme il n'y a pas de dispositif de sécurité, relâcher la touche dès que le chariot arrive en fin de course.
▷▷	MANUAL SEARCH FWD	Le chariot se déplace en avant (vers le centre du disque).	Le chariot se déplace vers la fin du disque à la vitesse élevée d'environ 3 cm/s. Comme il n'y a pas de dispositif de sécurité, relâcher la touche dès que le chariot arrive en fin de course.
□	STOP	Arrêt	Tous les asservissements sont ouverts.
⏏	EJECT	Ejection du magasin de clisque compact	Le magasin du disque compact est éjecté. Néanmois, la tête de lecture ne revient pas sur sa position de repos. De plus, même lorsque le disque est enfermé, la tête de lecture demeure tel quel.

Tableau 9-1

Pas No.	Réglage de l'oscilloscope V	Réglage de l'oscilloscope H	Points d'essai	Points de réglage	Points de contrôle / spécifications de réglage	Methode de réglage
1	**RÉGLAGES DE L'OFFSET DE CENTRAGE DE PISTE, DE L'OFFSET DE FOCALISATION ET DE L'OFFSET RF**					
				VR5 (TRK. BAL)	Offset de centrage de piste 45°	● Régler le mode d'essai (TEST). (※) ● Tourner le potentiomètre VR5 TRK. BAL (équilibrage de centrage de piste) de 45° depuis le centre dans le sens des aiguilles d'une montre.
			TP1 Broche 2 (TRK. ERR)	VR7 (TRK. OFS)	0V ± 50mV	● Ajuster le potentiomètre VR7 TRK. OFS (décalage de centrage de piste) de facon à ce que la tension à la broche 2 TRK. ERR (erreur de centrage de piste) de TP1 devienne égale à 0 V ± 50 mV.
			TP1 Broche 6 (FCS. ERR)	VR6 (FCS. OFS)	Offset de focalisation 0V ± 50mV	● Régler VR6 FCS. OFS (offset de focalisation) de manière à ce que la tensiton de FCS. ERR (erreur de focalisation) relevée sur la broche 6 de TP1 soit de 0 V ± 50 mV.
			TP1 Broche 1 (RF OUTPUT)	VR2 (RF. OFS)	Offset RF 100mV ± 50mV	● Régler VR2 RF. OFS (offset RF) de manière à ce que la tension de RF OUTPUT (sortie RF) relevée sur la broche 1 de TP1 soit de 100 mV ± 50 mV.
2	**VÉRIFICATION DE LA PUISSANCE DE SORTIE DE LA DIODE LASER (LD)**					
					Confirmation : moins de 0,13mW	● Régler le mode d'essai (TEST). (※) ● Appuyer sur la touche de centrage de piste arrière (TRACK FWD) (▷▷|) et enclencher la diode laser (LD). ● Placer la capteur de l'instrument destiné à mesurer la puissance laser au dessus de l'objectif et vérifier que la puissance de sortie de la diode laser (LD) est inférieure à 0,13 mW.
3	**VÉRIFICATION DU VERROUILLAGE DE FOCALISATION ET DU VERROUILLAGE DE MOYEU**					
	0,5V/div	100msec /div	TP1 Broche 1 (Sortie RF)		Présence de sortie RF Rotation normale	● Mettre en place le disque d'essai (TEST). ● Régler le mode d'essai (TEST). (※) ● Déplacer la tête de lecture à proximité du centre du disque en appuyant sur la touche de recherche [MANUAL SEARCH FWD (▷▷)]. ＊Cette étape doit absolument être réalisée. ● Observer le signal RF à la broche 1 de TP1 (sortie RF) au moyen d'un oscilloscope et vérifier que le signal RF sorte après l'enfoncement de la touche d'avance de piste TRACK FWD (▷▷|). ● Appuyer sur la touche de lecture (PLAY) (▷) et s'assurer que le disque tourne en sens normal avec approximativement la vitesse spécifiée (étant près du centre du disque, la vitesse de rotation est d'environ 300 tr/mn), sans anomalie ni inversion du sens de rotation.

※ : Voir page 45.

Pas No.	Réglage de l'oscilloscope V	Réglage de l'oscilloscope H	Points d'essai	Points de réglage	Points de contrôle / spécifications de réglage	Méthode de réglage
4	**RÉGLAGE DU RÉSEAU**					
						● Régler le mode d'essai (TEST). (※) ● Amener la tête de lecture à proximité du centre du disque en appuyant sur la touche de recherche manuelle avant (MANUAL SEARCH FWD) (▷▷). de façon à ce que la vis de réglage du réseau de la tête de lecture puisse être vue à travers le trou oval situé à la partie supérieure de l'asservissement. ● Insérer un ⊖ tournevis dans le trou de réglage depuis la partie supérieure du mécanisme, comme illustré à la figure 9-2, puis vérifier que la vis de réseau tourne. ● Appuyer séquentiellement sur les touches de piste avant TRACK FWD (▷▷|) et de lecture (PLAY) (▷), et fermer les asservissements de focalisation et de moyeu. (Ne pas fermer l'asservissement de centrage de piste.) ● Observer la forme d'onde à la broche 2 TRK. ERR (erreur de centrage de piste) de TP1 au moyen d'un oscilloscope. Introduire alors un filtre de coupure passe-bas 4 kHz. (Figure 9-3)
	0,5V/div	5msec /div	TP1 Broche 2 (TRK. ERR)	Réseau Réseau	Point zéro Amplitude maximum	● Faire touner un ⊖ tournevis et rechercher le point zéro. (Photo 9-1) ● Tourner ensuite lentement dans le sens contraire des aiguilles d'une montre le ⊖ tournevis depuis le point zéro et l'ajuster sur le point où la forme d'onde (signal d'erreur de centrage de piste) présente une première amplitude maximum. (Voir photo 9-2.) Note : Si le ⊖ tournevis est appuyé avec force, la tête de lecture se déplace vers le centre du disque et le réglage devient difficile à effectuer. ● Finalement, s'assurer que le signal d'erreur de centrage de piste (cette fois-ci le filtre de coupure passe-bas à 4kHz n'est pas introduit) n'a pas beaucoup varié lorsque la tête de lecture est déplacée vers le centre du disque, et aussi que la tension C-C du signal de centrage de piste n'a pas non plus beaucoup varié sur la circonférence extérieure du disque. Lorsque le niveau varie de plus de ±10 %, recommencer le réglage en tournant la vis de réseau jusqu'au point d'amplitude d'erreur maximum.

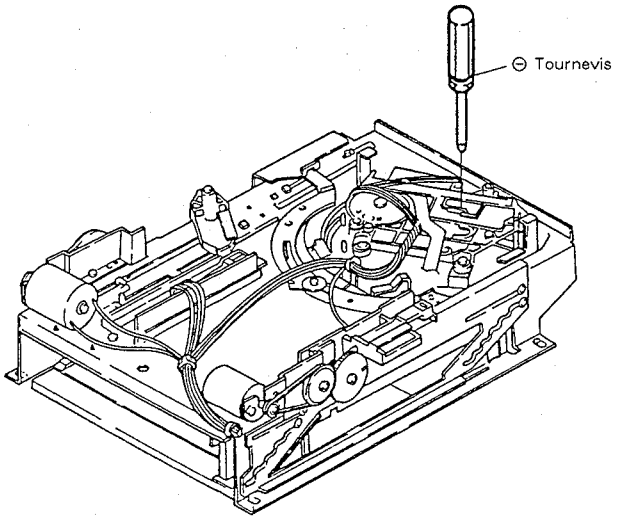


Fig. 9-2

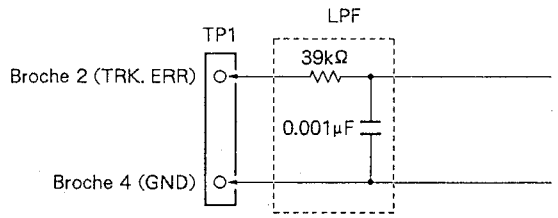


Fig. 9-3

※ : Voir page 45.

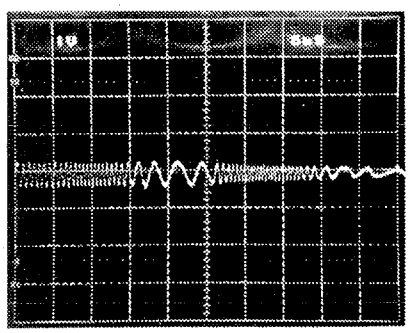


Photo. 9-1
Point nul

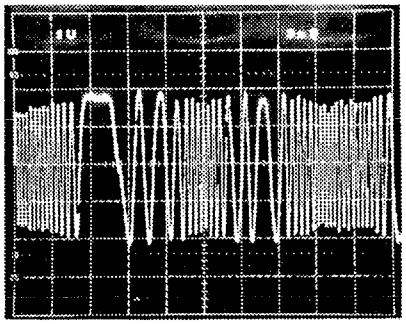


Photo. 9-2
Amplitude maximale

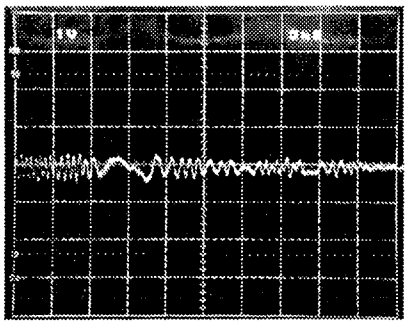


Photo. 9-3
Ceci n'est pas la forme d'onde du point nul

Pas No.	Réglage de l'oscilloscope V	Réglage de l'oscilloscope H	Points d'essai	Points de réglage	Points de contrôle / spécifications de réglage	Méthode de réglage
5	**RÉGLAGE DE L'EQUILIBRAGE DE CENTRAGE DE PISTE**					
	0,5V/div	5msec /div	TP1 Broche 2 (TRK. ERR)	VR5 (TRK. BAL)	TRK. ERR	● Mettre en place le disque d'essai (TEST). ● Régler le mode d'essai (TEST). (※) ● Amener la tête de lecture à proximité du centre du disque en appuyant sur la touche de recherche manuelle avant (MANUAL SEARCH FWD) (▷▷). ● Appuyer sur la touche de piste avant (TRACK FWD) (▷▷|) et sur la touche de lecture (PLAY) (▷) pour faire tourner le disque. ● Observer la broche 2 TRK. ERR (erreur de centrage de piste) de TP1 au moyen d'un oscilloscope et ajuster au moyen de potentiomètre VR5 TRK. BAL (équilibrage de centrage de piste) de façon à ce que la composante continue de l'erreur de centrage de piste disparaisse. Note : Avant de procéder aux ajustements ci-dessus, veiller à régler le décalage d'erreur de piste.

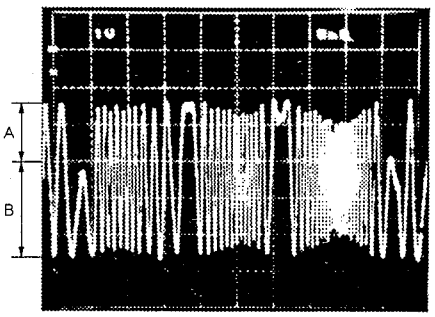


Photo. 9-4 Eléments CC mêlés au signal

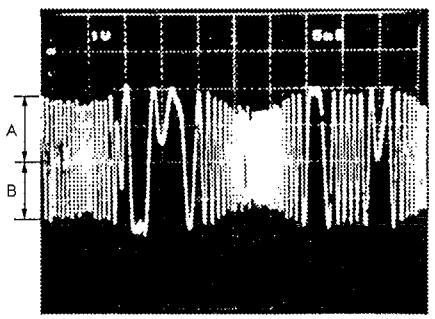


Photo. 9-5 Eléments CC éliminés

※ : Voir page 45.

Pas No.	Réglage de l'oscilloscope V	Réglage de l'oscilloscope H	Points d'essai	Pointe de réglage	Points de contrôle / spécifications de réglage	Méthode de réglage
6	**RÉGLAGE TANGENTIEL**					
		200nsec / div	TP1 Broche 1 (sortie RF)	Vis de réglage tangentiel	Mire Best Eye	● Mettre en place le disque d'essai (TEST) ● Régler le mode d'essai (TEST). (※) ● Amener la tête de lecture à proximité du centre du disque en appuyant sur la touche de recherche manuelle avant (MANUAL SEARCH FWD) (▷▷). ● Appuyer séquentiellement sur les touches d'avance de piste (TRACK FWD) (▷▷|), de lecture (PLAY) (▷) et de pause (PAUSE) (▯▯), et fermer tous les asservissements. (Le voyant de pause s'allume.) ● Observer le signal RF à la broche 1 (sortie RF) de TP1 au moyen d'un oscilloscope et régler au moyen de la vis tangentielle, de façon à ce que la mire Best Eye devienne claire. (Figure 9-4 et 9-5) ● Le point de réglage se situe au milieu entre le point ou la mire se détériore en tournant la vis tangentielle dans le sens des aiguilles d'une montre et le point où la mire se détériore en tournant la vis tangentielle dans le sens inverse des aiguilles d'une montre. Comme critère, observer que la forme d'onde globale soit claire et que l'une des formes de losange se situe dans la mire (Photo 9-7) ; réaliser le réglage en un point optimum où la forme de losange apparaît avec des traits relativement fins.

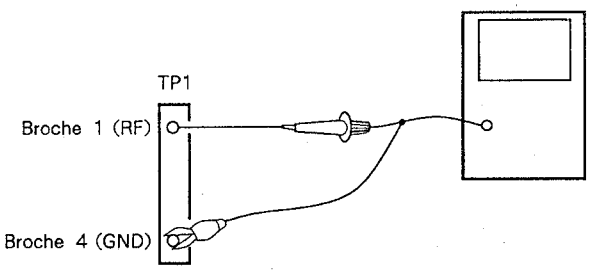
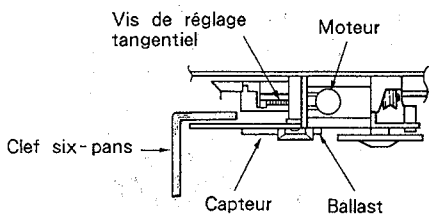


Fig. 9-4

Note : Pendant le réglage, tenir la clef six-pans vers le haut de façon à ce que le corps de la tête de lecture ne descende pas.

※ : Voir page 45.



Dans l'illustration ci-dessous, le dessus et le dessous de l'appareil sont en réalité à l'envers.

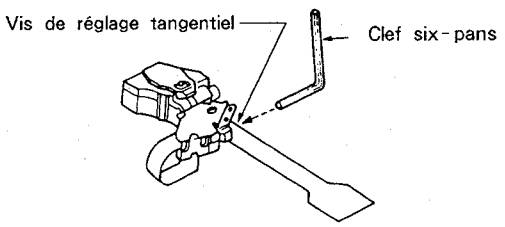


Fig. 9-5 Réglage tangentiel

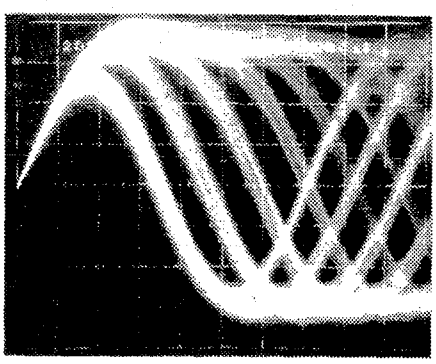


Photo. 9-6

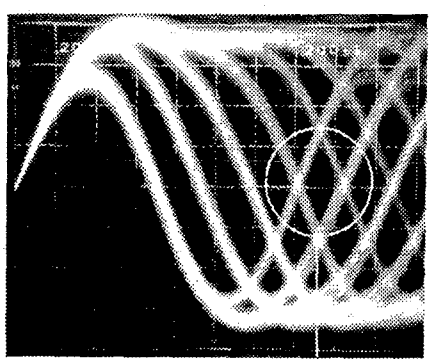


Photo. 9-7

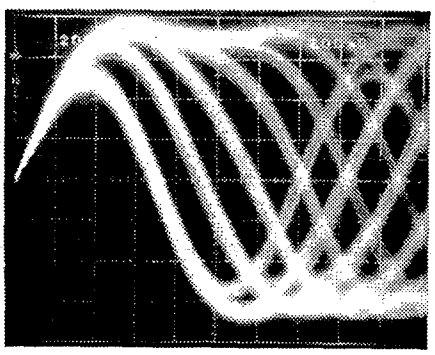
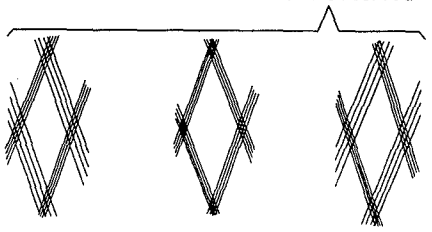


Photo. 9-8

Partie à ovserved



Insatisfaisant

Ajustement optimal

Insatisfaisant

Pas No.	Réglage de l'oscilloscope V	Réglage de l'oscilloscope H	Points d'essai	Points de réglage	Points de contrôle / spécifications de réglage	Méthode de réglage
7	**RÉGLAGE DU NIVEAU RF**					
			TP1 Broche 1 (RF)	VR1 Puissance laser	1,5 Vc-c $^{+0.2V}_{-0V}$	● Régler le mode d'essai (TEST). (※) ● Reproduire le disque d'essai (TEST) et raccorder la sonde d'un oscilloscope à la broche 1 RF (sortie RF) de TP1 et mesurer la tension C-C de la forme d'onde RF. ● Régler VR1 (puissance laser) de façon que la tension soit de 1,5 Vc-c $^{+0.2V}_{-0V}$.
8	**RÉGLAGE DU GAIN DE FOCALISATION**					
	20mV/div, 5mV/div. Canal 1 (X), Canal 2 (Y) (Sonde 10 : 1)		Axe X : TP1 Broche 5 (FCS. IN) Axe Y : TP1 Broche 6 (FCS. ERR)	VR3 (FCS. GAN)	Différence de phase 90°	● L'alimentation étant coupée (POWER OFF), raccorder un oscilloscope et un oscillateur de la manière indiquée à la figure 9-6. ● Régler l'appareil en mode de lecture normale. ● Enclencher l'alimentation de l'oscillateur et délivrer un signal de 1,2 kHz a 2 Vc-c. Note : En fonction de l'oscillateur utilisé, certains appareils fournissent un courant continu lors de leur enclenchement. Par conséquent, il est préférable de raccorder l'oscillateur après avoir enclenché son alimentation. ● Ajuster le potentiomètre VR3 FCS. GAN (gain de focalisation) de façon à ce que la figure de Lissajou observée sur l'osciloscope devienne un cercle horizontal (déphasage 90°).

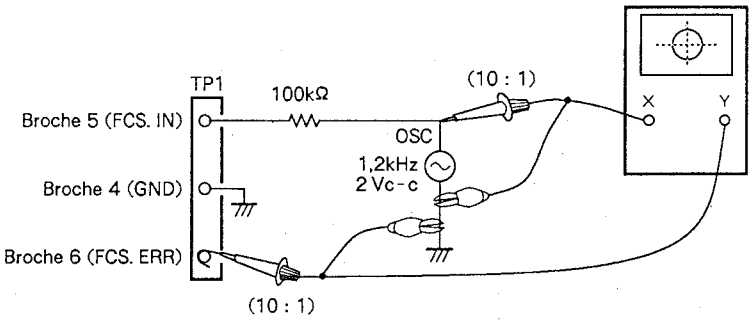


Fig. 9-6

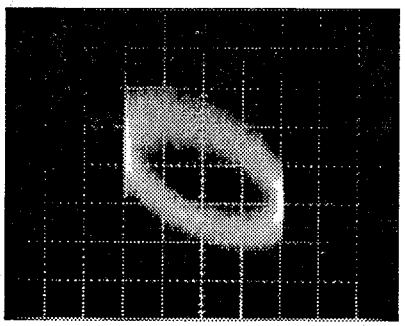


Photo. 9-9
Gain sur-compensé

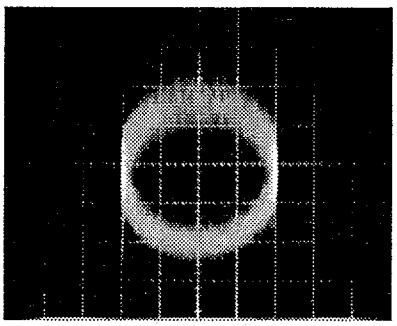


Photo. 9-10
Gain optimal

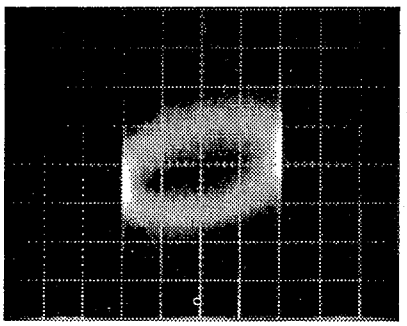


Photo. 9-11
Gain sous-compensé

※ : Voir page 45.

Pas No.	Réglage de l'oscilloscope V	Réglage de l'oscilloscope H	Points d'essai	Points de réglage	Points de contrôle / spécifications de réglage	Méthode de réglage
9	**RÉGLAGE DU GAIN DE CENTRAGE DE PISTE**					
	50mV/div, 5mV/div. Canal 1 (X), Canal 2 (Y) (Sonde 10 : 1)		Axe X : TP1 Broche 3 (TRK. IN) Axe Y : TP1 Broche 2 (TRK. ERR)	VR4 (TRK. GAN)	Déphasage 90°	● L'alimentation étant coupée (POWER OFF), raccorder un oscilloscope et un oscillateur de la manière indiquée à la figure 9-7. ● Régler l'appareil en mode de lecture normale. ● Enclencher l'alimentation de l'oscillateur et fournir un signal de 1,2 kHz à 2 Vc-c. Note : En fonction de l'oscillateur utilisé, certains appareils fournissent un courant continu lors de leur enclenchement. Par conséquent, il est préférable de raccorder l'oscillateur après avoir enclenché son alimentation. ● Ajuster le potentiomètre VR4 TRK GAN (gain de centrage de piste) de façon à ce que la figure de Lissajou sur l'oscilloscope devienne un cercle horizontal (déphasage 90°).

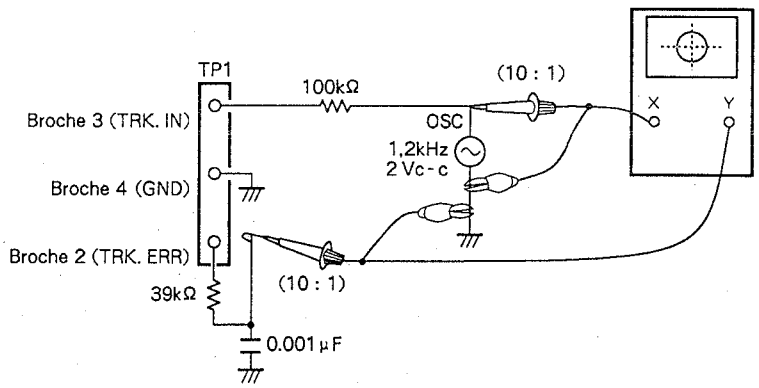


Fig. 9-7

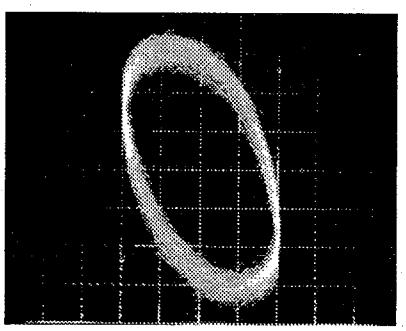


Photo. 9-12
Gain sur-compensé

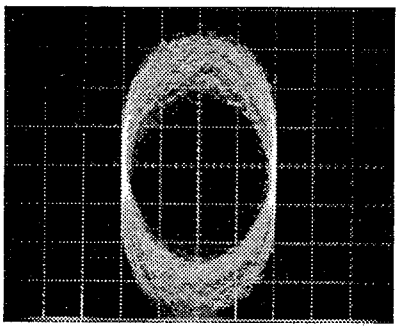


Photo. 9-13
Gain optimal

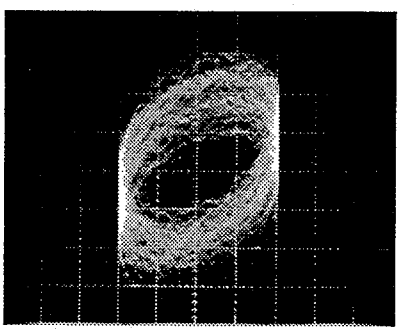
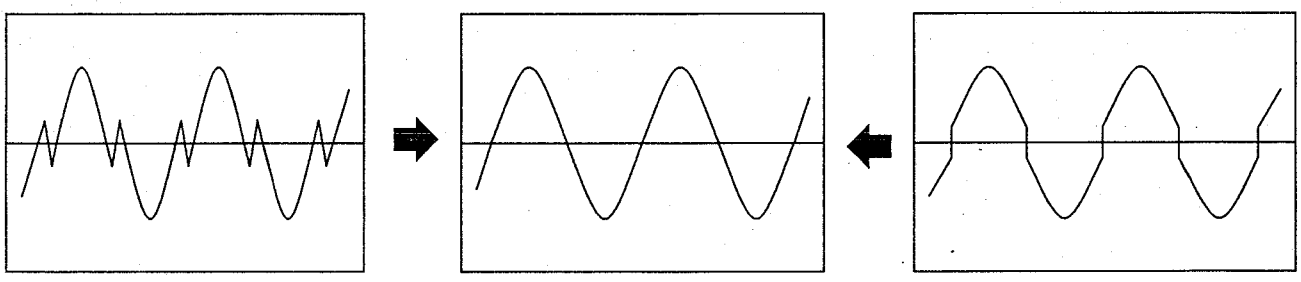


Photo. 9-14
Gain sous-compensé

Pas No.	Reglage de l'oscilloscope V	Reglage de l'oscilloscope H	Points d'essai	Points de réglage	Points de contrôle / spécifications de réglage	Méthode de réglage
10	**RÉGLAGE DE LA FRÉQUENCE PROPRE DU VCO**					
			TP2 Broche 2 (PLCK)	VR8 (VCO. ADJ)	4,275 ± 0,025MHz	● Régler le mode d'essai (TEST). (※) ● Court-circuiter entre les ponts ASY et GND un ⊖ tournevis, etc. (Figure 9-1) ● Reccorder un fréquencemètre capable de mesurer audessus de 10 MHz à la broche 2 de TP2 (PLCK). ● Ajuster le potentiomètre VR8 VCO ADJ (réglage du VCO) de façon à ce que la valeur indiquée par le fréquencemètre devienne égale à 4,275 ± 0,025MHz.
11	**MÉTHODE DE CONTRÔLE DE LA CARACTÉRISTIQUE S (ERREUR DE FOCALISATION)**					
			TP1 Broche 6 (FCS. ERR)			● Régler le mode d'essai (TEST). (※) ● Réaliser un court-circuit entre la broche 5 FCS. IN (entrée de focalisation) de TP1 et la terre GND. ● Appuyer sur la touche d'avance de piste (TRACK FWD) (▷▷|) et observer simultanément la forme d'onde à la broche 6 FCS. ERR (erreur de focalisation) de TP1 au moyen d'un oscilloscope.
12	**RÉGLAGE DE MSB**					
	5mV/div	0.2msec /div	JA1 Borne LINE OUT (canal gauche)	VR10	Onde sinusoidale	● Réglaer l'appareil en mode de lecture normale. ● Reproduire la piste 20 (−60dB, 1kHz, canal gauche, canal droit du disque d'essai YEDS-7). Raccorder l'oscilloscope au canal gauche de la borne LINE OUT (JA1) et observer la forme d'onde de la sortie audio. ● Ajuster VR10 MSB (canal gauche) de sorte que l'onde sinusoidale apparaisse surr l'oscilloscope. ● Ajuster VR9 (canal droit) de la même manière.
			JA1 Borne LINE OUT (canal droit)	VR9	Onde sinusoidale	

● Forme d'onde de la distorsion de croisement zéro



NG OK NG

※ : Voir page 45.

9. AJUSTES

Los items de ajuste de este modelo deberán ser efectuados en el orden mostrado abajo.

• Itemes de ajuste y comprobación

1. Ajuste de la desviación de seguimiento, foco y RF
2. Confirmación de la alimentación de salida de LD (diodo láser)
3. Confirmación de enclavamiento del enfoque y del eje
4. Ajuste del retículo
5. Ajuste del equilibrio de seguimiento
6. Ajuste tangencial
7. Ajuste del nivel de RF
8. Ajuste de la ganancia de enfoque
9. Ajuste de la ganancia de seguimiento
10. Ajuste de la frecuencia propia de VCO
11. Método para confirmar el carácter S (error de enfoque)
12. Ajuste de MSB

• Equipo de medición

1. Osciloscopio de doble traza
2. Medidor de alimentación del láser
3. Disco de prueba (YEDS-7)
4. Filtro de ajuste de equilibrio de seguimiento
5. Filtro de ajuste de ganancia de bucle
6. Generador de senñal
7. Contador de frecuencia
8. Otras herramientas generales

• Modo de prueba

Ajuste del modo de prueba y los procedimientos de cancelación

(1) Para disponer el mode de prueba, coloque en ON el interruptor POWER del reproductor (S301) mientras presiona el interruptor TEST MODE (S1). (terminales del modo de ajuste).

(2) Para cancelar el modo de prueba, simplemente gire el interruptor de POWER del reproductor a OFF.

Las varias funciones de tecla en el modo de prueba están enlistadas en la Tabla 9-1.

• Tores variables (VR) de ajuste y sus nombres

VR1 : Alimentación del láser
VR2 : Compensación de RF (RF. OFS)
VR3 : Ganancia de enfoque (FCS. GAN)
VR4 : Ganancia de seguimiento (TRK. GAN)
VR5 : Equilibrio de seguimiento (TRK. BAL)
VR6 : Desviación de enfoque (FCS. OFS)
VR7 : Desviación del seguimiento (TRK. OFS)
VR8 : Ajuste de VCO (VCO. ADJ)
VR9 : Ajuste de MSB (canal izquierdo)
VR10 : Ajuste de MSB (canal derecho)

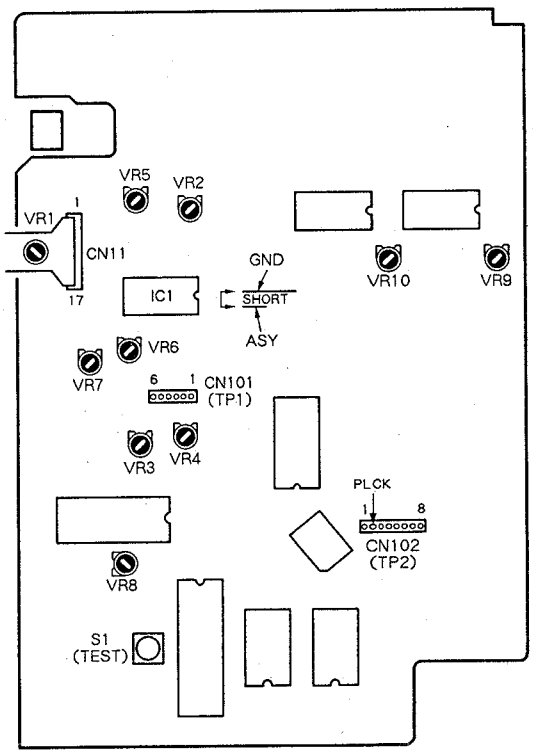
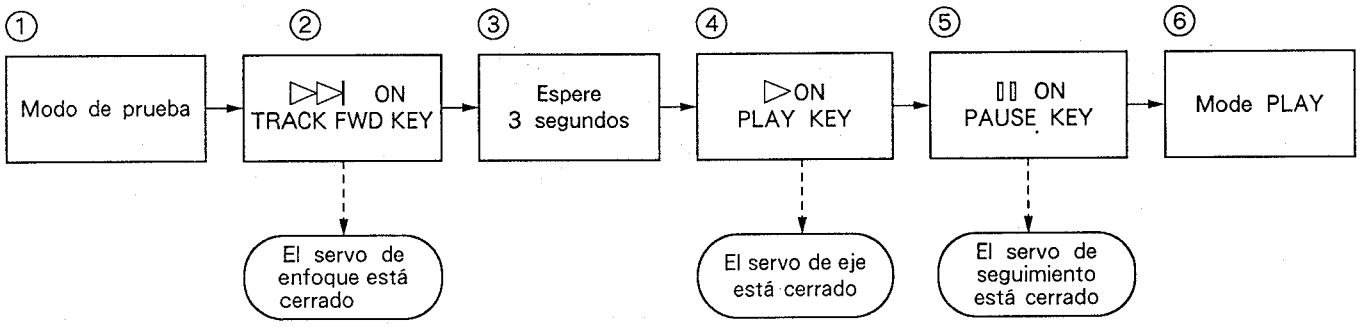


Fig. 9-1 Punto de ajuste

En el modo de prueba, cada servocircuito puede ser cerrado y abierto por operaciones separadas. Consecuentemente, cada servo deberá ser cerrado uno a la vez (en secuencia en serie) para ajustar el modo de PLAY (reproducción).
Fijese que el modo de PLAY no se activa simplemente presionando la tecla de PAUSE (pausa) (▯▯) en el modo de prueba.

Ejemplo : Conmutando del modo de STOP (parado) a PLAY.

* Cada servomecanismo funciona en una secuencia en serie en el modo de prueba.



• Funciones de tecla en el modo de prueba

Símbolo	Nombre de tecla	Función durante el modo de prueba	Descripció
▷▷|	TRACK FWD	El servo de enfoque está cerrado.	El diode láser se enciende. El actuador se mueve arriba /abajo, luego se cierra el servo de enfoque.
▷	PLAY	El servo de eje está cerrado.	El eje comienza a rotar y se cierra el servo cuando se convierte en el modo de servo CLV-A.
▯▯	PAUSE	El servo de seguimiento está carrado/abierto	Ejecuta la operatión de conexión oscilante. Cuando se cierra el servo de seguimiento y se pone en el modo de PLAY presionando esta tecla (el servo de enfoque y el del eje deberán estar cerrados), y el indicador de pausa se enciende. El servo de seguimiento se abre presionando de nuevo la tecla.
◁◁	MANUAL SEARCH REV	El carro se mueve en la dirección inversa (hacia el centro del disco)	El carro se mueve hacia el centro del disco a una alts velocidad de como 3 cm/seg. Ya que no existe un mecanismo de seguridad para detener el carro, libere la tecla cuando el carro llegue al final.
▷▷	MANUAL SEARCH FWD	El carro se mueve en la dirección hacia delante. (hacia el final del disco)	El carro se mueve hacia el final del disco a una alta velocidad de como 3 cm/seg. Ya que no existe un mecanismo de seguridad para detener el carro, libere la tecla cuando el carro llegue al final.
□	STOP	PARADO	Todos los servos están abiertos.
⏏	EJECT	(Cargador de discos compactos)	El cargador de discos compactos. Sin embargo, el captador no regresa a su posición de aparcamiento. Además, aun cuando se cierra el disco el captador permanece tal como está.

Tabla 9-1

No. de paso	Ajuste del osciloscopio V	Ajuste del osciloscopio H	Puntos de prueba	Puntos de ajuste	Items de verificación/ Especificaciones de ajuste	Procedimiento de ajuste
1	**AJUSTES DE LA DESVIACIÓN DE SEGUIMIENTO, FOCO Y RF**					
			Patilla 2 de TP1 (TRK. ERR) Patilla 6 de TP1 (FCS. ERR) Patilla 1 de TP1 (RF OUTPUT)	VR5 (TRK. BAL) VR7 (TRK. OFS) VR6 (FCS. OFS) VR2 (RF. OFS)	Desviación de seguimiento 45 é 0V ± 50mV Compens. de foco 0V ± 50mV Compens. de RF 100mV ± 50mV	● Ajuste el modo de TEST. (※) ● Gire el volumen de TRK. BAL (Equilibrio de seguimiento) de VR5 en el sentido de las menecillas del reloj 45° del centro. ● Ajuste VR7 TRK. OFS (de seguimiento) de modo que el voltaje en TRK. ERR (desviación de seguimiento) de la patilla 2 de TP1 se ponga en 0V ± 50 mV. ● Ajuste VR6 FCS. OFS (compensación de foco) de modo que el voltaje de FCS. ERR) error de foco) en la patilla 6 de TP1 sea 0V ± 50mV. ● Ajuste VR2 RF. OFS (compensación de RF) de modo que el voltaje de salida de RF en la patilla 1 de TP1 sea 100 mV ± 50 mV.
2	**CONFIRMACIÓN DE LA ALIMENTACIÓN DE SALIDA DE LD (DIODO LÁSER)**					
					Confirmación Menos de 0,13mW	● Ajuste el modo de TEST. (※) ● Presione la tecla de TRACK FWD (▷▷|) y encienda el LD (Diodo láser). ● Ubique el sensor del medidor de potencia del láser inmediatamente arriba del objetivo, y confirme que la potencia de salida del LD sea menos de 0,13 mW.
3	**CONFIRMACIÓN DE ENCLAMIENTO DEL ENFOQUE Y DEL EJE**					
	0,5V/div	100mseg / div	Patilla 1 de TP1 (Salida de RF)		Existe salida de RF Rotación normal	● Ajuste del disco de TEST. ● Ajuste del mode de TEST. (※) ● Cambie el captador cerca del centro del disco presionando la tecla de MANUAL SEARCH FWD (▷▷). * Tenga en cuenta que este paso deberá ser ejecutado. ● Observe RF (Radio frecuencia) de la patilla 1 de TP1 con un osciloscopio y confirme que se saque la senñal de RF después de presionar la tecla de TRACK. ERR (|▷▷). ● Presione la tecla de PLAY (▷) y asegúrese que el disco rota en la dirección normal casi a la velocidad especificada (tal como está cerca del centro del disco, la velocidad de rotación es alrededor de 300 rpm) y que no rote anormalmente o inversamente.

※ : Consulte la página 55.

No. de paso	Ajuste del osciloscopio V	Ajuste del osciloscopio H	Puntos de prueba	Puntos de ajuste	Items de verificación/ Especificaciones de ajuste	Procedimiento de ajuste
4	**AJUSTE DEL RETÍCULO**					
						● Ajuste el mode TEST. (※) ● Cambie el captador cerca del centro del disco presionando la tecla de MANUAL SEARCH FWD (▷▷) de modo que el tornillo de ajuste de retículo del captador pueda ser visto a través del orificio oval en el lado superior del servomecanismo. ● Inserte un ⊖ destornillador en el orificio del lado superior or del mecanismo come se muestra en la Fig. 9-2, y confirme que gira el tornillo de retículo. ● Presione la tecla de TRACK FWD (▷▷|) y la tecla de PLAY (▷) secuencialmente y cierre el servo de enfoque y el del eje. (No cierre el servo de seguimiento.) ● Observe la forma de onda en TRCK. ERR (Error de seguimiento) de la patilla 2 de TP1 con un osciloscopio. Luego inserte un filtro de paso bajo de corte. (Fig. 9-3)
	0,5V/div	5mseg /div	Patilla 2 de TP1 (TRK. ERR)	Retículo	Punto cero	● Gire el ⊖ destornillador y encuentre el punto cero. (Foto. 9-1)
				Retículo	Amplitud máxima	● Luego, gire lentamente el ⊖ destornillador hacia el seutido contrario del reloj desde el punto cero y ajuste en el punto donde la forma de onda (Senñal de error de seguimiento) primeramente se ponga a una amplitud máxima. (Vea Foto. 9-3)
						Nota : Si el ⊖ destornillador se presiona fuertemente, el captador se mueve hacia el centro del disco, por consiguiente el ajuste resulta difícil.
						● Finalmente, asegúrese de confirmar que la señal de error de seguimiento (en este momento, no se ha insertado el filtro de paso bajo de corte de 4 kHz) cuando el captador se mueve hacia el centro del disco y el voltaje de P-P do la señal de error de seguimiento en la circunferencia exterior del disco no haya variado considerablemente. Cuando se desvía el nival arriba de ±10%, ajuste de nuevo girando el tornillo de retículo a un punto de amplitud de error mínimo.

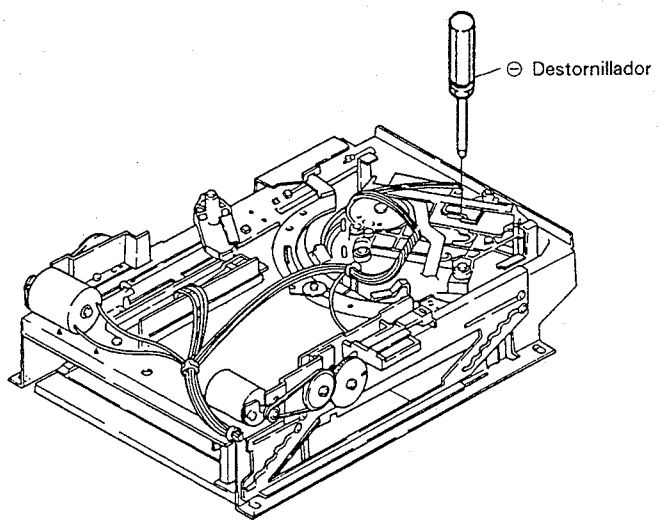


Fig. 9-2

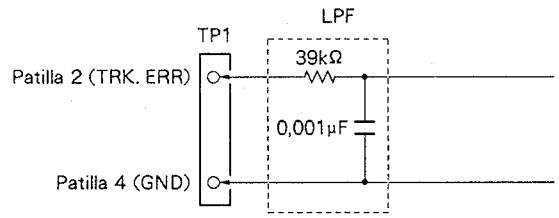


Fig. 9-3

※ : Consulte la página 55.

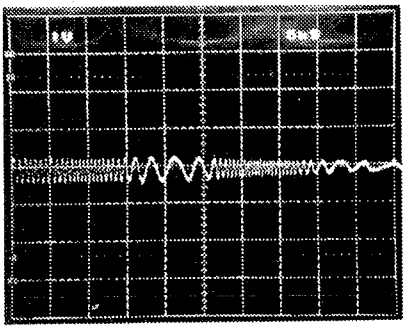


Foto. 9-1
Punto nulo

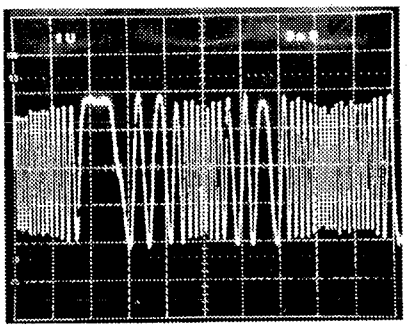


Foto. 9-2
Amplitud máxima

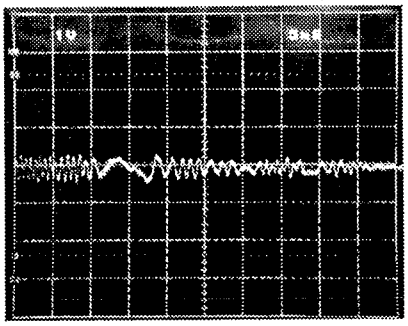


Foto. 9-3
Esta no es la forma de onda de punto nulo

No. de paso	Ajuste del osciloscopio V	Ajuste del osciloscopio H	Puntos de prueba	Puntos de ajuste	Items de verificación/ Especificaciones de ajuste	Procedimiento de ajuste
5	**AJUSTE DEL EQUILIBRIO DE SEGUIMIENTO**					
	0,5V/div	5mseg /div	Patilla 2 de TP1 (TRK. ERR)	VR5 (TRK. BAL)	TRK. ERR	● Ajuste el disco de TEST. ● Ajuste el mode de TEST. (※) ● Cambie el captador cerca del centro del disco presionando la tecla de MANUAL SEARCH FWD (▷▷). ● Presione la tecla de TRACK FWD (▷▷|) y la tecla de PLAY (▷) para comenzar a voltear el disco. ● Obseve TRK. ERR (Error de sequimiento) de la patilla 2 de TP1 con un osciloscopio y ajuste con el volumen de TRK. BAL (Equilibrio de seguimiento) de VR5 de modo que la componente de CC del error de seguimiento desaparezca. Nota : Antes de realizar los ajustes indicados arriba, asegúrese de compensar el error de seguimiento.

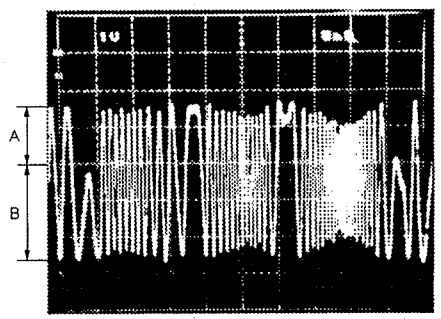


Foto. 9-4
Elementos de CC mezclados en la señal

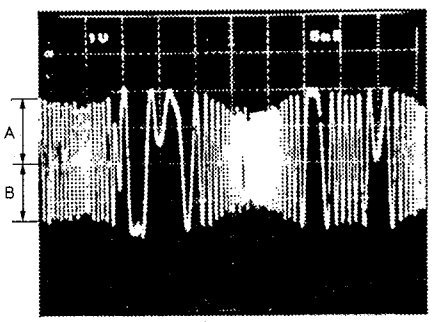


Foto. 9-5
Elementos de CC eliminados

※ : Consulte la página 55.

No. de paso	Ajuste del osciloscopio V	Ajuste del osciloscopio H	Puntos de prueba	Puntos de ajuste	Items de verificación/ Especificaciones de ajuste	Procedimiento de ajuste
6	**AJUSTE TANGENCIAL**					
		200nseg / div	Patilla 1 de TP1 (Salida de RF)	Tornillo de ajuste de la tangencial	Mejor imagen de prueba	● Ajuste el disco de TEST. ● Ajuste el mode de TEST. (※) ● Cambie el carro cerca del centro del disco presionando la tecla de MANUAL SEARCH FWD (▷▷). ● Presione la tecla de TRAK FWD (▷▷|), la tecla de PLAY (▷) y la tecla de PAUSE (▯▯) secuencialmente, y cierre todos los servos. (El indicador de pausa se enciende.) ● Observe el RF de la patilla 1 (Salida de RF) de TP1 con un osciloscopio y ajuste con el tornillo de la tangencial de modo que la imagen de prueba resulte nítida. (Fig. 9-4 y 9-5) ● El punto de ajuste es el punto medio entre el punto donde la imagen de prueba se deteriora girando el tornillo de la tangencial en el sentido de las manecillas del reloj, y el punto donde la imagen de prueba se deteriora girando el tornillo de la tangencial en contra del sentido de las menecillas del reloj. Como un criterio, observe que la forma de onda en conjunto sea nítida y que una de las figuras de diamante esté dentro de la imagen de prueba (Foto. 9-7), y ajuste al punto óptimo donde la forma de diamante se vea relativamente como una línea fina.

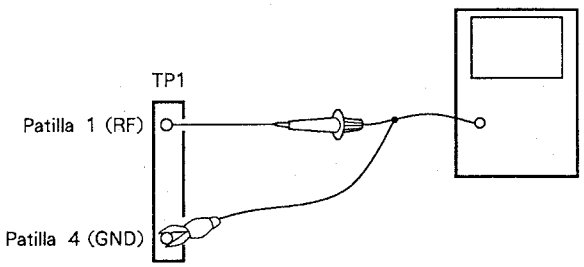
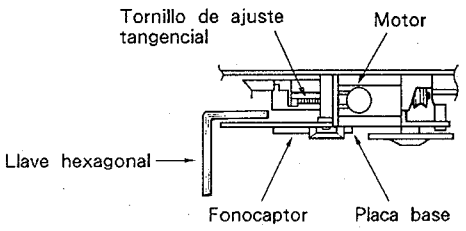


Fig. 9-4

(Nota) Durante el ajuste, sostenga la llave hexagonal hacia arriba para evitar que el cuerpo del captador vaya hacia abajo.

※ : Consulte la página 55.



En la figura siguiente, las partes superior e inferior son opuestas a las del producto real.

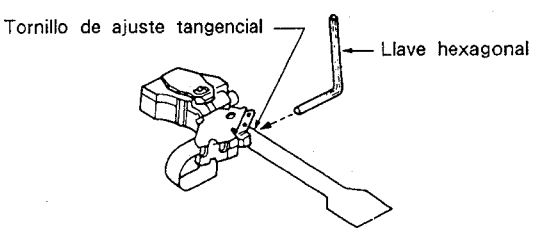


Fig. 9-5 Ajuste tangencial

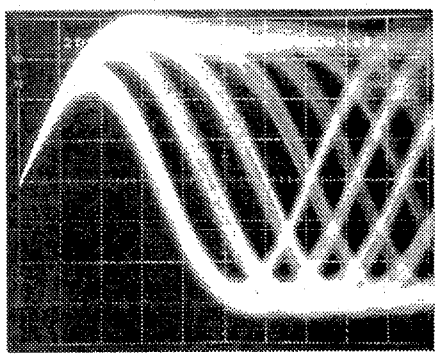


Foto. 9-6

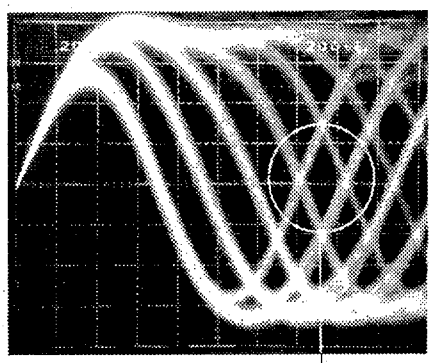


Foto. 9-7

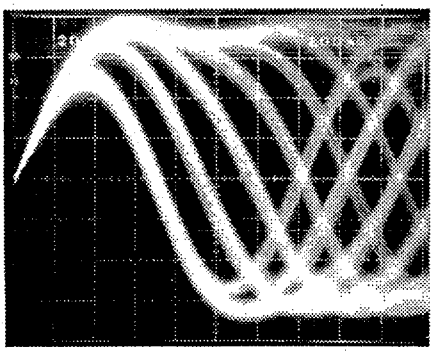
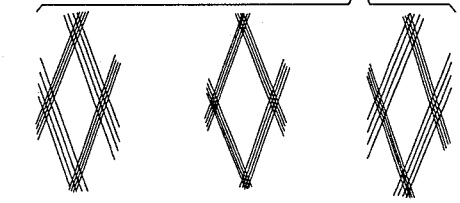


Foto. 9-8

Parte que debe observar



Insatisfactorio Ajuste óptimo Insatisfactorio

No. de paso	Ajuste del osciloscopio V	Ajuste del osciloscopio H	Puntos de prueba	Puntos de ajuste	Items de verificación/ Especificaciones de ajuste	Procedimiento de ajuste
7	**AJUSTE DEL NIVEL DE RF**					
			Patilla 1 de TP1 (RF)	Alimentación del laser VR1	1,5Vp-p $^{+0.2V}_{-0V}$	● Ajuste el mode de TEST. (※) ● Reproduzca el disco de TEST y conecte la sonda de un osciloscopio a la RF de la patilla 1 (Sailda de RF) de TP1 y mida el voltaje de P-P de la forma de onda de RF. ● Ajuste VR1 (alimentación del láser) que el valor sea 1,5Vp-p $^{+0.2V}_{-0V}$.
8	**AJUSTE DE LA GANANCIA DE ENFOQUE**					
	20mV/div, 5mV/div. CH1 (X), CH2 (Y) (SONDA 10 : 1)		Eje X : Patilla 5 de TP1 (FCS. IN) Eje Y : Patilla 6 de TP1 (FCS. ERR)	VR3 (FCS. GAN)	Diferencia de fase 90°	● En el estado de POWER OFF (apagado), conecte el osciloscopio y el oscilador como se muestra en la Fig. 9-6. ● Ponga la unidad en el modo de reproducción (PLAY) normal. ● Encienda el oscilador y extraiga 1,2kHz 2 Vp-p. Nota : Dependiendo en los osciladores, algunos de ellos producen CC cuando son encendidos. Por lo tanto, es conveniente conectar el oscilador después del encendido. ● Ajuste con el volumen de FCS. GAN (Ganancia de enfoque) de VR3 de modo que la figura de Lissajous del osciloscopio a ser un círculo horizontal (90° de diferencia de fase).

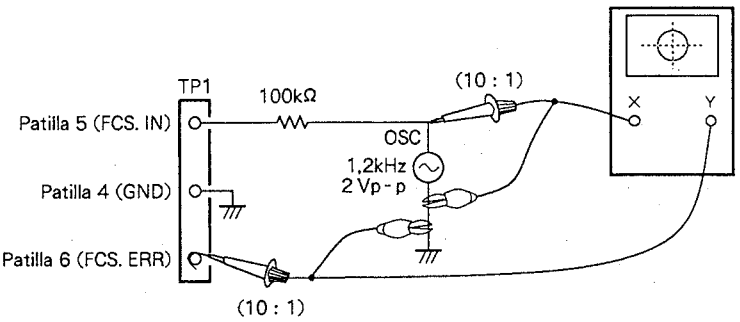


Fig. 9-6

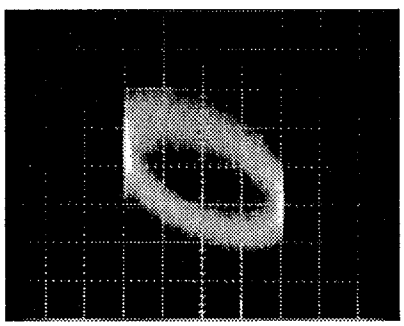


Foto. 9-9
Ganancia sobrecompensada

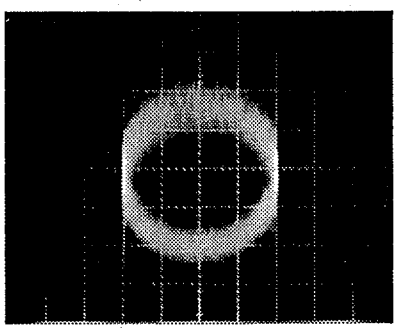


Foto. 9-10
Ganancia óptima

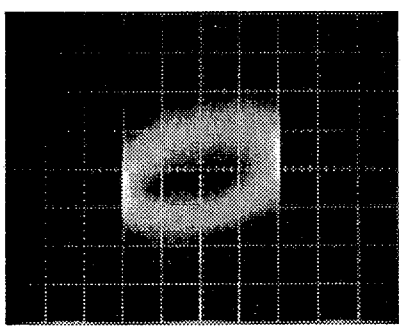


Foto. 9-11
Ganancia subcompensada

※ : Consulte la página 55.

No. de paso	Ajuste del osciloscopio V	Ajuste del osciloscopio H	Puntos de prueba	Puntos de ajuste	Items de verificación/ Especificaciones de ajuste	Procedimiento de ajuste
9	**AJUSTE DE LA GANANCIA DE SEGUIMIENTO**					
	50mV/div, 5mV/div CH1 (X), CH2 (Y) (SONDA 10 : 1)		Eje X : Patilla 3 de TP1 (TRK. IN) Eje Y : Patilla 2 de TP1 (TRK. ERR)	VR4 (TRK. GAN)	90° de diferencia	● En el estado de POWER OFF (apagado), conecte un osciloscopio y un oscilador como se muestra en la Fig. 9-7. ● Ponga la unidad en el modo de reproducción (PLAY) normal. ● Encienda el oscilador y extraiga 1,2 kHz 2 Vp-p. Nota : Dependiendo en los osciladores, algunos de ellos producen CC cuando son encendidos. Por la tanto, es conveniente conectar el oscilador después del encendido. ● Ajuste con el volumen de TRK. GAN de VR4 (Ganacia de seguimiento) de modo que la figura de Lissajous del osciloscopio llege a ser un círculo horizontal (90° de diferencia de fase).

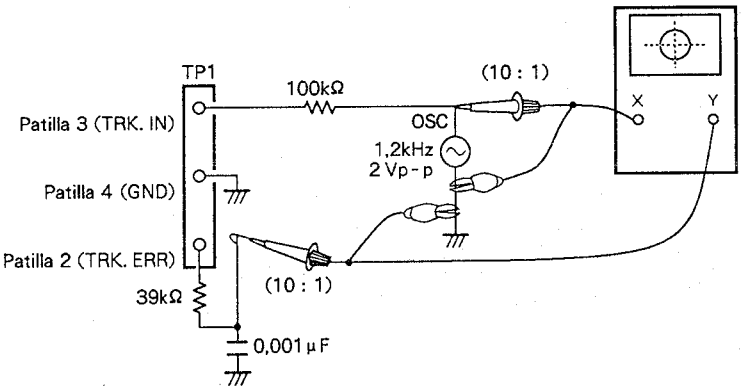


Fig. 9-7

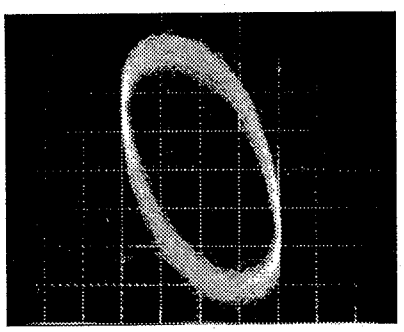


Foto. 9-12
Ganancia sobrecompensada

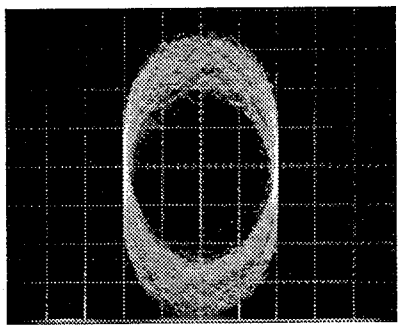


Foto. 9-13
Ganancia óptima

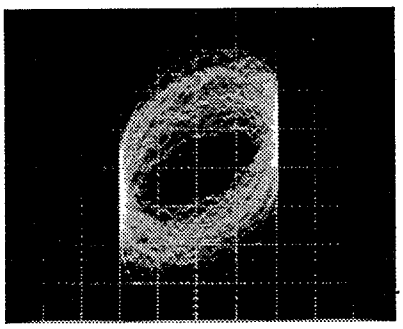
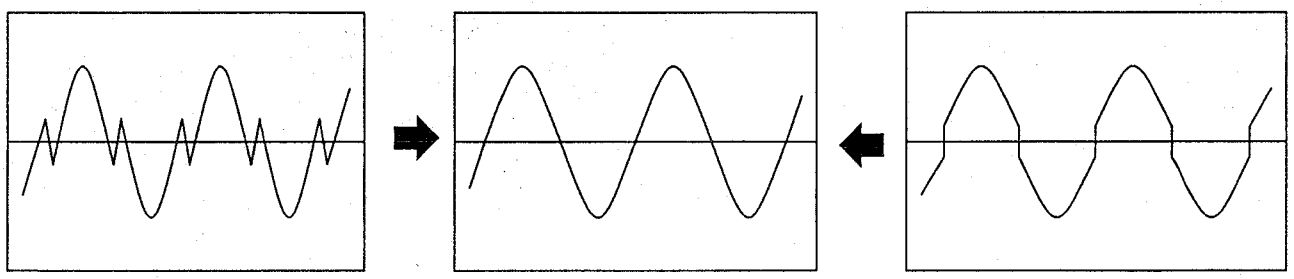


Foto. 9-14
Ganancia subcompensada

No. de paso	Ajuste del osciloscopio V	Ajuste del osciloscopio H	Puntos de prueba	Puntos de ajuste	Items de verificación/ Especificaciones de ajuste	Procedimiento de ajuste
10	**AJUSTE DE LA FRECUENCIA PROPIA DE VCO**					
			Patilla 2 de TP2 (PLCK)	VR8 (VCO. ADJ)	4,275 ± 0,025MHz	● Ajuste el modo de TEST. (※) ● Haga un cortocircuito entre ASY y la conexión volante de GND con ⊖ destornillador, etc. (Fig. 9-1) ● Conecte el frecuencímentro, que pueda medir arriba de 10MHz, a la patilla 2 de TP2 (PLCK). ● Ajuste con el volumen VCO ADJ (ajuste de VCO) de VR8 de modo que el valor del frecuencímetro se ponga en 4,275 ± 0,025MHz.
11	**MÉTODO PARA CONFIRMAR EL CARÁCTER S (ERROR DE ENFOQUE)**					
			Patilla 6 de TP1 (FCS. ERR)			● Ajuste el modo de TEST. (※) ● Haga un cortocircuito entre FCS. IN (Entrada de enfoque) de la patilla 5 de TP1 y GND. ● Presione la tecla de TRACK FWD (▷▷|) y observe la forma de onda de FCS. ERR (Error de enfoque) de la patilla 6 de TP1 con un osciloscopio.
12	**AJUSTE DE MSB**					
	5mV/div	0.2msec /div	JA1 terminal LINE OUT (canal derecho)	VR10	Onda senoidal	● Ponga la unidad en el modo de reproducción normal. ● Reproduzca la canción 20 (−60 dB, 1kHz, canales izquierdo y derecho) del disco de prueba (YEDS-7). Conecte el osciloscopio a el canal derecho del terminal LINE OUT (JA1), y observe la forma de onde de salida de audio. ● Ajuste VR10 MSB (canal derecho) hasta obtener una forma de onda senoidal en el osciloscopio. ● Ajuste VR9 (canal izquierdo) de la misma forma.
			JA1 terminal LINE OUT (canal izquierdo)	VR9	Onda senoidal	

● Forma de onda de la distorsion del punto de intersección del eje con cero



NG OK NG

※ : Consulte la página 55.

10. FOR KC, HEM AND SD TYPES

NOTES :
- Parts without part number cannot be supplied.
- Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5 %, and K = 10 %).

560 Ω → 56 × 10^1 → 561 ····· RD1/4PS 5 6 1 J
47k Ω → 47 × 10^3 → 473 ····· RD1/4PS 4 7 3 J
0.5 Ω → 0R5 ····· RN2H 0 R 5 K
1 Ω → 010 ····· RS1P 0 1 0 K

Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62k Ω → 562 × 10^1 → 5621 ····· RN1/4SR 5 6 2 1 F

10.1 CONTRAST OF MISCELLANEOUS PARTS

The KC, HEM and SD types are the same as the KU type with the exception of the following sections.

Mark	Symbol & Description	Part No.				Remarks
		KU type	KC type	HEM type	SD type	
◉	Main board assembly	PWZ1835	PWZ1835	PWZ1840	PWZ1840	
◉	Function board assembly	PWZ1932	PWZ1932	PWZ1934	PWZ1934	
	Synchro board assembly	Non supply	Non supply	Non supply	Non supply	
⚠	Strain relief	CM-22C	CM-22C	CM-22B	CM-22B	
⚠	AC power cord	PDG1002	PDG1002	PDG1003	PDG1013	
⚠	Power transformer (AC120V)	PTT1094	PTT1094	• • • • •	• • • • •	
⚠	Power transformer (AC220V)	• • • • •	• • • • •	PTT1095	• • • • •	
⚠	Power transformer (AC 110V, 120 – 127V, 220V, 240V)	• • • • •	• • • • •	• • • • •	PTT1096	
⚠	Voltage selector (AC 110V, 120 – 127V, 220V, 240V)	• • • • •	• • • • •	• • • • •	PSB1002	
	CD packing case	PHG1455	PHG1456	PHG1456	PHG1456	For packing
	Connection cord with mini plug	PDE-319	PDE-319	• • • • •	• • • • •	
	Display screen	PAM1295	PAM1295	PAM1313	PAM1295	
	Insulation cover	Non supply	Non supply	• • • • •	• • • • •	
	Insulation sheet	• • • • •	• • • • •	PNM1057	PNM1057	*1
	Operating instructions (English)	PRB1113	PRB1113	• • • • •	PRB1113	
	Operating instructions (French)	• • • • •	PRD1002	• • • • •	• • • • •	
	Oprating instructions (English/French/German/Italian)	• • • • •	• • • • •	PRE1109	• • • • •	
	Oprating instrustions (Dutch/Swedish/Spanish/Portuguese)	• • • • •	• • • • •	PRF1027	• • • • •	

*1 : For insulation between Power trans. and Rear panel.

Note : As to the SCHEMATIC DIAGRAM and P. C. BOARDS CONNECTION DIAGRAM of KC type, refer to those of KU type.

MAIN BOARD ASSEMBLY

The Main board assembly (PWZ1840) is the same as the Main board assembly (PWZ1835) with the exception of the following sections.

Mark	Symbol & Description	Part No.		Remarks
		PWZ1835	PWZ1840	
	D20,D22	1SS254	• • • • •	
	C158	CEAS330M16	• • • • •	
	R118	RD1/6PM102J	• • • • •	
	R120	RD1/6PM244J	• • • • •	
	R151	RD1/6PM391J	• • • • •	
	R154	RD1/6PM822J	• • • • •	
	JA3 (OPTICAL DIGITAL OUT)	TOTX173	• • • • •	
	C121,C122	CQSF102J50	CQSA102J50	

SYNCHRO BOARD ASSEMBLY

The Synchro board assembly of HEM and SD types are the same as that of KU type with the exception of the following sections.

Mark	Symbol & Description	Part No.		Remarks
		KU type	HEM and SD types	
	D21,D23	1SS254	• • • • •	
	C702	CKCYF103Z50	• • • • •	
	C703	CCCSL101J50	• • • • •	
	R701	RD1/6PM121J	• • • • •	
	JA702,JA703 (CONTROL IN/OUT)	RKN1004	• • • • •	

FUNCTION BOARD ASSEMBLY

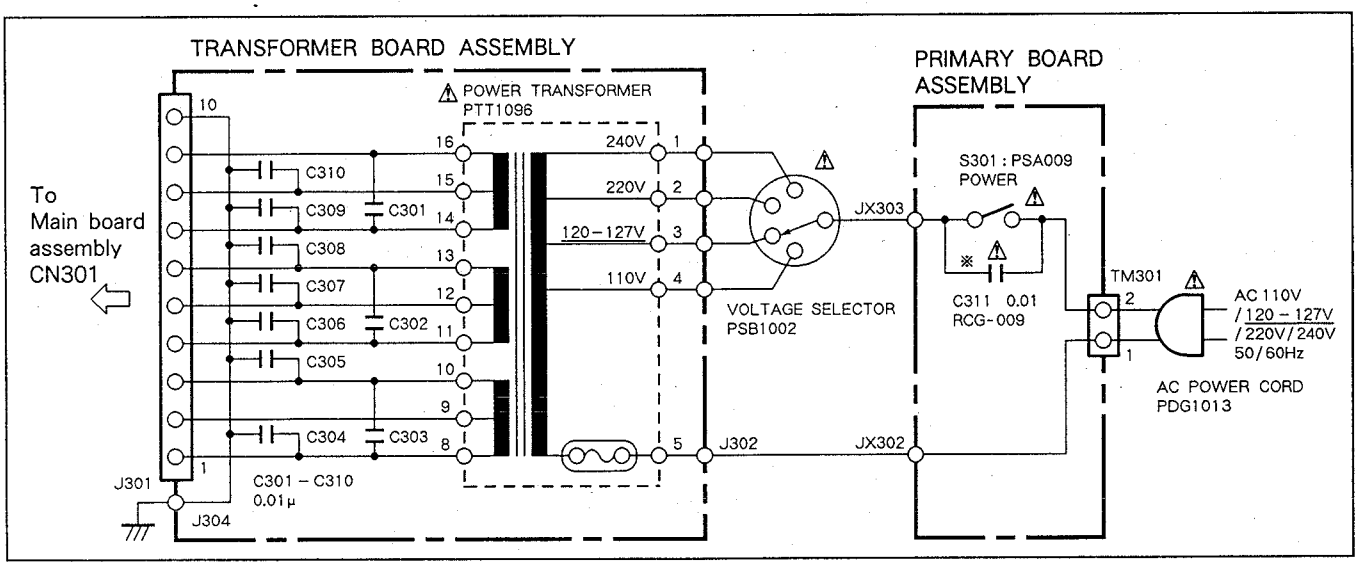
The Function board assembly (PWZ1934) is the same as the Function board assembly (PWZ1932) for the service supply parts.

10.2 FOR SD AND HEM TYPES

Note : The SCHEMATIC DIAGRAM and the P.C.BOARDS CONNECTION DIAGRAM of the SD and HEM types are showed in the KU type with the exception of the power supply section. (Pages 17 thru 34)

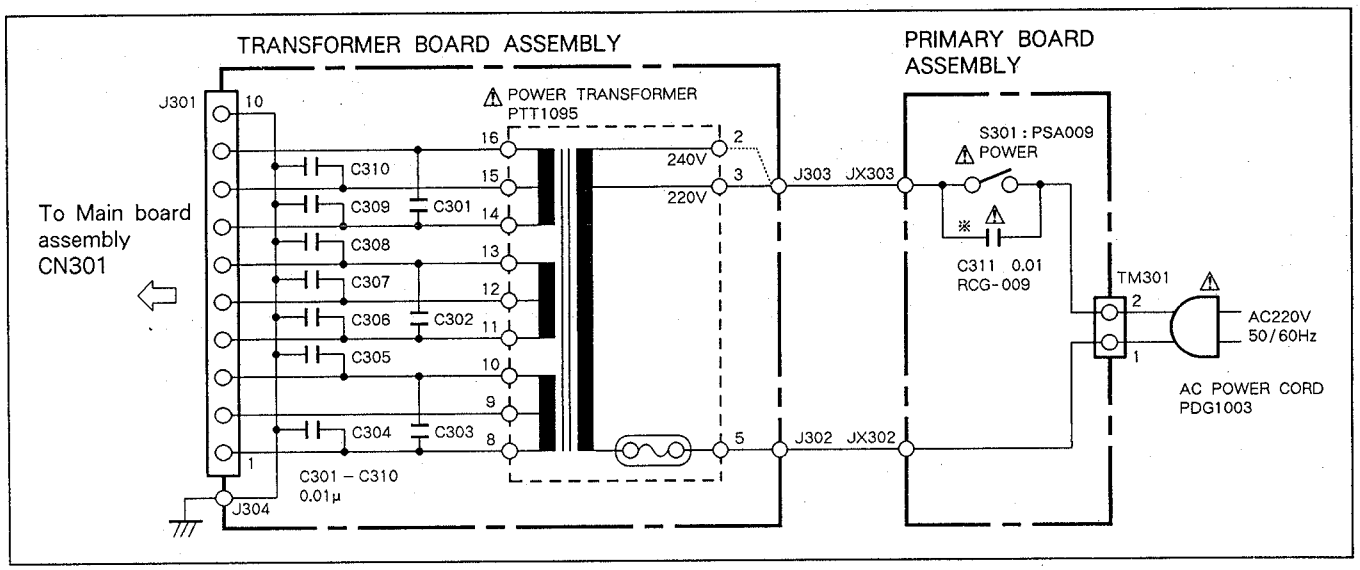
10.2.1 FOR SD TYPE

• SCHEMATIC DIAGRAM

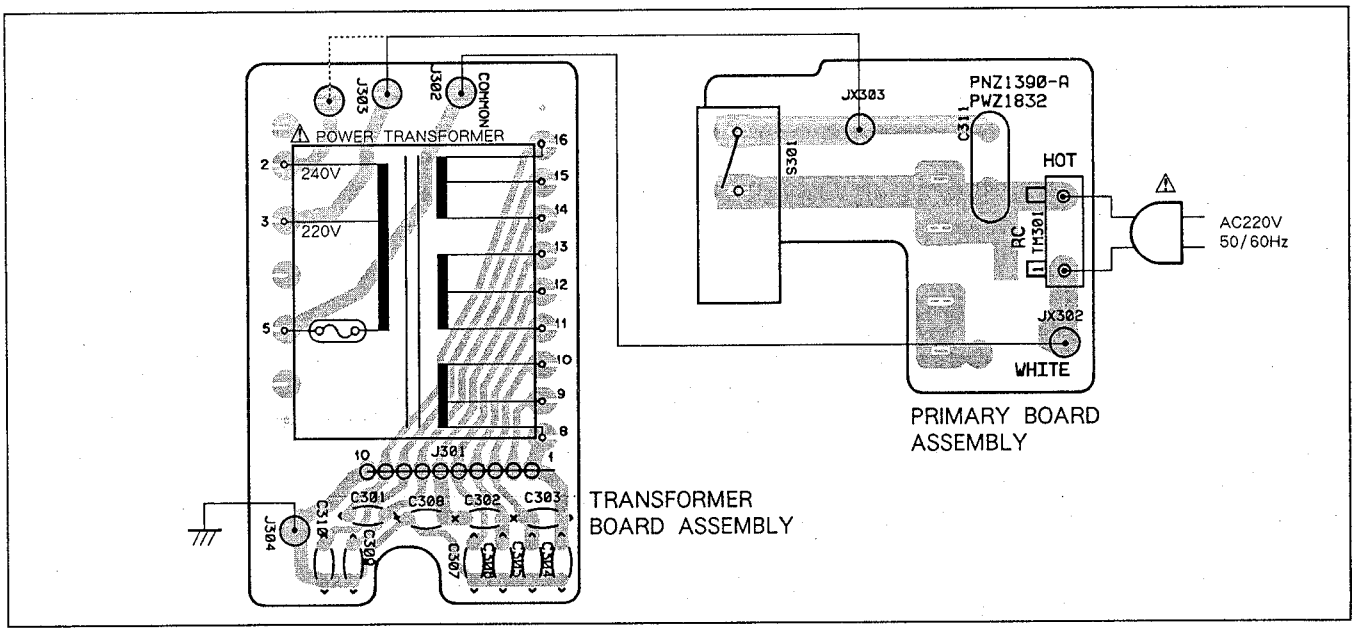


10.2.2 FOR HEM TYPE

● SCHEMATIC DIAGRAM



● P.C.BOARDS PATTERN



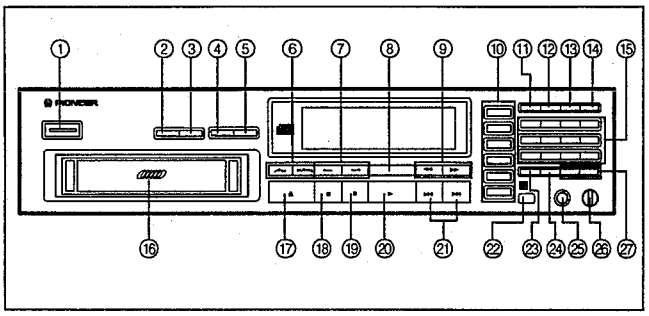
● Line Voltage Selection

Line voltage can be changed with following steps.

1. Disconnect the AC power cord.
2. Remove the Bonnet case.
3. Change the connection of the primary lead wires (J303). (Connect as shown in schematic diagram)
4. Stick the line voltage label on the rear panel.

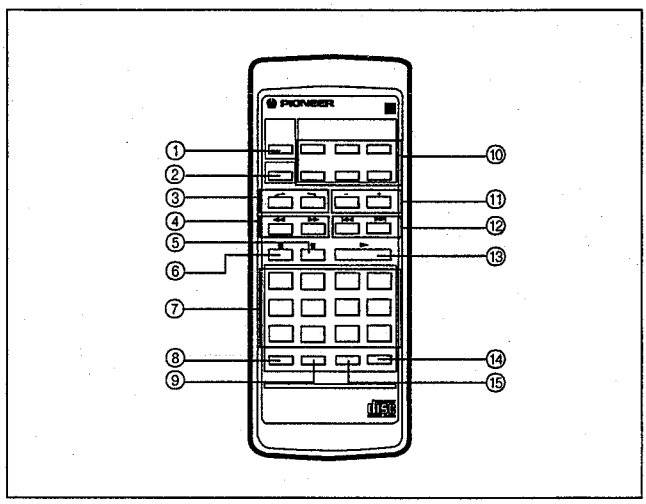
Description	Part No.
220V label	AAX-193
240V label	AAX-192

11. PANEL FACILITIES



FRONT PANEL

① **POWER ON/OFF switch**
② **MULTI MEMORY STORE button**
③ **MULTI MEMORY ERASE button**
④ **REPEAT button**
⑤ **TIME button**
⑥ **AUTO FADER buttons (IN/OUT)**
⑦ **INDEX SEARCH button (/)**
On some CDs, an index number is provided in a track to divide it into sections. The jackets of these discs bear the INDEX mark.
⑧ **RANDOM PLAY button**
⑨ **MANUAL SEARCH buttons (◄◄/►►)**
⑩ **DISC NUMBER buttons (DISC 1 - DISC 6)**
⑪ **PGM button**
⑫ **CHECK button**
⑬ **CLEAR button**
⑭ **DELETE button**
⑮ **TRACK NUMBER/Digit buttons (1-10, +10, ≧20)**
⑯ **Magazine insertion slot**
⑰ **EJECT button (▲)**
⑱ **STOP button (■)**
⑲ **PAUSE button and indicator (II)**
⑳ **PLAY button and indicator (►)**
㉑ **TRACK search buttons (I◄◄/►►I)**
㉒ **Remote sensor**
Receives the signal from the remote control unit.
㉓ **AUTO PROGRAM EDIT button**
㉔ **TIME FADE EDIT button**
㉕ **Headphones jack (PHONES)**
㉖ **Headphones volume (PHONES LEVEL)**
㉗ **LEVEL buttons (–/+)**



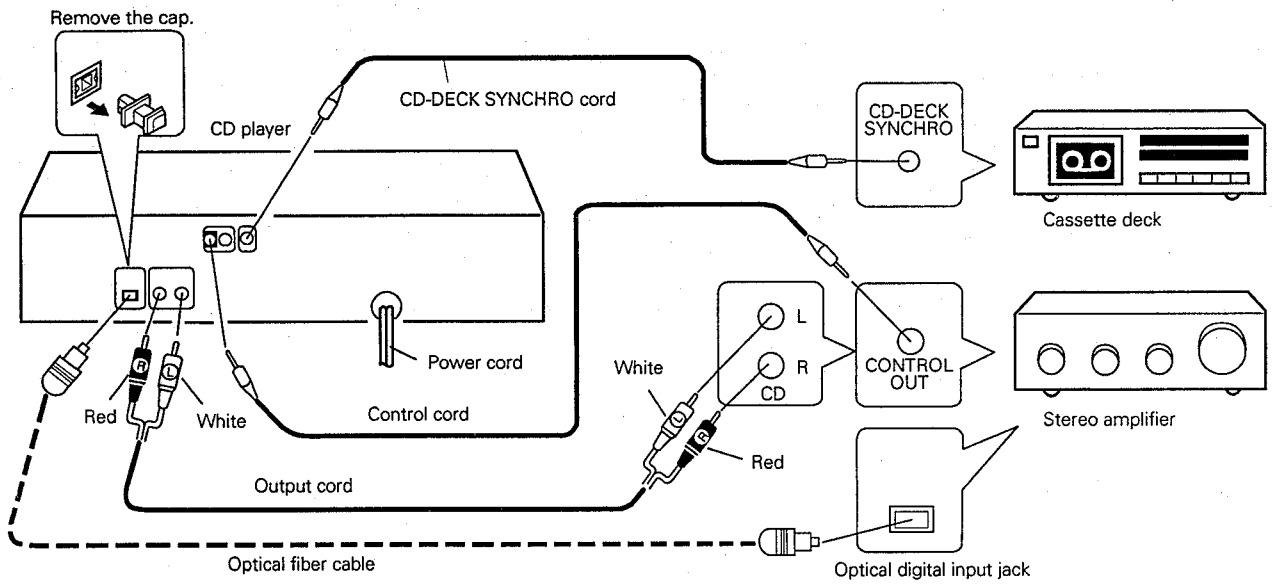
REMOTE CONTROL UNIT

Remote control buttons with the same names or marks as buttons on the front panel of the player control the same operations as the corresponding front panel buttons.

① **EJECT button (▲)**
② **RANDOM PLAY button**
③ **FADE-IN/FADE-OUT buttons (/)**
④ **MANUAL search buttons (◄◄ / ►►)**
⑤ **PAUSE button (II)**
⑥ **STOP button (■)**
⑦ **Track number/Digit buttons (1-10, +10, ≧20)**
⑧ **PGM button**
⑨ **CHECK button**
⑩ **DISC NUMBER buttons (1 - 6)**
⑪ **OUTPUT LEVEL buttons (+/–)**
⑫ **TRACK search buttons (I◄◄/ ►►I)**
⑬ **PLAY button (►)**
⑭ **DELETE button**
⑮ **CLEAR button**

12. CONNECTIONS

- Make sure that all of the components are turned off before making connections.



Making connections

1 Connect the OUTPUT jacks of this unit to the input jacks (CD or AUX) of the amplifier. Make sure that the white plugs are connected to the left (L) jacks and the red plugs to the right (R) jacks.
- Be sure not to connect this unit to the amplifier's PHONO jacks, as sound will be distorted and normal playback will not be possible.

2 Connect the power cord to a household AC wall outlet or an AC outlet on your amplifier.
- Make sure plugs are inserted fully into the jacks and wall outlet.

Connecting to an optical digital jack (U.S. and Canadian models only)

This player can be connected to an amplifier equipped with an optical digital jack.

1. Remove the protective dust cap from this player's OPTICAL DIGITAL OUT jack.
2. Use an optical fiber cable to connect the OPTICAL DIGITAL OUT jack of this player to the optical digital input jack of the amplifier.
- Align the plug of the optical fiber cable with the optical digital jack an fully insert the plug to make a secure connection.

Use a separately sold optical fiber cable for the optical digital jack connections, this player can only be connected to an amplifier which uses the same type of optical transmission/reception module.

NOTE:
Fade-in, fade-out and other volume control cannot be done through the digital output terminal.

Precautions concerning use of optical fiber cables (Sold separately for U.S. and Canadian models)

- Fully insert the optical fiber cable plugs all the way into the jacks.
- Be careful not to fold or crimp the cable. When coiling an optical fiber cable for storage, make sure the diameter of the coil is 6 inch (15 cm) or more.
- Use an optical fiber cable with a length of 10 feet (3 m) or less.
- Protect the optical fiber cable plugs from scratches and dust.
- When the unit is not connected using an optical fiber cable, be sure to keep the protective dust cap plugged into the optical digital output jack at all times.

CD-Deck synchro function

If you have a Pioneer cassette deck provided with the CD-Deck synchro function, connect the CD-DECK SYNCHRO jacks of the CD player and cassette deck. With this function, synchro recording can be carried out between player and deck.
- For details on connections and operation, refer to the instruction manual supplied with the cassette deck.
- The CD-DECK SYNCHRO cord is not supplied with the CD player.

NOTE:
When only the digital output is connected, the CD-Deck synchro recording does not function. To operate it, connect the output cord to the stereo amplifier as well as connecting the digital output.

System remote control with a Pioneer stereo amplifier that has the SR mark

(Available with U.S. and Canadian models only)
When a Pioneer stereo amplifier bearing the SR mark is used, connect the CONTROL IN jack on the rear panel of the CD player to the CONTROL OUT jack of the amplifier. This will enable the CD player to be controlled using the remote control unit supplied with the stereo amplifier. If you do not plan to use this feature, it is not necessary to connect CONTROL IN/OUT jacks.
- The control cord is supplied with the CD player.
- The remote control unit supplied with the amplifier can be used to control Play, Stop, Pause, Track/Disc Search and Disc Change operations.
- For instructions regarding connections and operation, refer to the operating instruction manual provided with your stereo amplifier.

NOTES:
- *When a control cord is connected to the player's CONTROL IN jack, direct control of the player with the remote control unit is not possible. Operate the player with the remote control unit by aiming it at the amplifier.*
- *Be sure to connect both of the control cord's plugs securely to the CONTROL IN and CONTROL OUT terminals. Do not connect only one end of the cable.*
- *When only the optical digital output is connected, the remote sensor of the amplifier does not function. To operate it, connect the output cord to the stereo amplifier as well as connecting the digital output.*

13. SPECIFICATIONS

1. General

Type ..... Compact disc digital audio system
Power requirements
European models ..... AC 220 V, 50/60 Hz
U.K., Australian models ..... AC 240 V, 50/60 Hz
U.S., Canadian models ..... AC 120 V, 60 Hz
Other models ..... AC 110/120 - 127/220/240V (switchable) 50/60 Hz
Power consumption 17W
Operating temperature ..... +5°C - +35°C
+41°F - +95°F
Weight ..... 5.5 kg (12 lb, 2 oz)
External dimensions ..... 420(W) X 326(D) X 109(H) mm
16-9/16(W) X12-27/32(D) X 4-5/16(H) in

2. Audio section

Frequency response ..... 2 Hz - 20 kHz
S/N ratio ..... 110 dB or more (EIAJ)
Dynamic range ..... 98 dB or more (EIAJ)
Channel separation ..... 105 dB or more (EIAJ)
Harmonic distortion ..... 0.002% or less (EIAJ)
Output voltage 2.0V
Wow and flutter ..... less than ±0.001% (W.PEAK) (below measurable level) (EIAJ)
Channels ..... 2-channel (stereo)

3. Output terminal

Audio line output
Headphone jack with volume control
Control input/output jacks (Equipped with U.S. and Canadian models)
CD-DECK SYNCHRO jack
Optical digital output (U.S. and Canadian models only)

4. Functions

Number of discs to be stored - maximum 6.

Basic Operation Buttons
- PLAY, PAUSE, STOP

Search Function
- Disc Search
- Track Search
- Manual Search
- Index Search

Programming
- Maximum 40 steps
- Pause
- Program Check/Correction (remote control unit)
- Program Clear (single track or all tracks)
- Delete Play

Repeat Functions
- 1 Track Repeat
- All Discs Repeat
- Program Repeat
- Random Play Repeat
- Delete Play Repeat
- Delete Random Play Repeat
- Program Random Play Repeat

Random Play
- Random Play (repeat also available)
- Delete Random Play (repeat also available)
- Program Random Play (repeat also available)

Switching Display
Time consumed, remaining time (track/disc), and total time

Timer Start

Digital Level Controller
Volume control can be done.

Level Memory

One-touch Fade
Fade-in and fade-out possible.

Variable Fade
The interval of fade-in/out can be specified.

Time Fade Editing
Selects the tracks within the specified time. Playback stops with a fade-out.

Auto Program Editing
Selects the tracks within the specified time.

Multi-Memory
Stores programs/disc output level/TOC.

5. Display

PLAY indicator
PAUSE indicator
FL Tube Display

- Elapsed Time Display (min, sec)
- Remaining Time (track/disc) Display
- Total Time Display
- Disc Number, Track Number, Index Number
- Program Step Number
- Program Indicator
- Repeat Indicator
- Random Play Indicator
- ATT Level Meter and Display
- Time Fade Editing Indicator
- Auto Program Editing Indicator
- Delete Indicator
- Multi-Memory TOC Data/Level/Program/Delete Indicators
- Disc Symbol Indicators

6. Accessories

- Remote control unit 1
- Size AAA/R03/dry batteries 2
- Six-compact-disc magazine 1
- Single-compact-disc magazine 1
- Output cord 1
- Control cord 1
  (U.S. and Canadian models only)
- Operating instructions 1

NOTE:
Specifications and design subject to possible modification without notice, due to improvements.

The Magazine Type Multi-Play CD Players with mark and the Magazines with the same mark are compatible for 5-inch (12cm) discs